DOE/NE-ID-11238

U.S. Department of Energy
Idaho Operations Office

Action Memorandum for the Accelerated Retrieval Project II within Pits 4 and 6 of the Subsurface Disposal Area

May 2006

Idaho Cleanup Project

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Prepared for the
U.S. Department of Energy
DOE-NE Idaho Operations Office

Signature sheet for the *Action Memorandum for the Accelerated Retrieval Project II within Pits 4 and 6 of the Subsurface Disposal Area*. This action is conducted by the U.S. Department of Energy, with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.

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4/10/06
Date

Signature sheet for the *Action Memorandum for the Accelerated Retrieval Project II within Pits 4 and 6 of the Subsurface Disposal Area*. This action is conducted by the U.S. Department of Energy, with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.

Nicholas Ceto
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4/17/06
Date

Signature sheet for the *Action Memorandum for the Accelerated Retrieval Project II within Pits 4 and 6 of the Subsurface Disposal Area.* This action is conducted by the U.S. Department of Energy, with the concurrence of the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality.

Daryl F. Koch — April 13 2006

Daryl F. Koch
Federal Facilities Agreement and Consent Order
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Date

ABSTRACT

This action memorandum documents the decision process for a non-time-critical removal action to perform limited excavation and retrieval of selected waste streams from a designated portion of the Subsurface Disposal Area at the Radioactive Waste Management Complex within the Idaho National Laboratory. The selected retrieval area is located in the eastern end of Pit 4 and the west end of Pit 6. The waste in this area originated primarily from the Rocky Flats Plant. The area was selected by the U.S. Department of Energy, the Idaho Department of Environmental Quality, and the U.S. Environmental Protection Agency, based on inventory evaluations identifying significant quantities of transuranic and other contaminated waste disposed of in the area. The project, referred to as the Accelerated Retrieval Project II, was evaluated in the *Engineering Evaluation/Cost Analysis for the Accelerated Retrieval Project II*, which was released for public review in March 2005.

The focused objective of the non-time-critical removal action is to perform a targeted retrieval of certain Rocky Flats Plant waste streams that are highly contaminated with transuranic radionuclides, volatile organic compounds, and various isotopes of uranium. Performance of the action will

- Remove targeted waste streams and associated contaminants from a portion of the Subsurface Disposal Area
- Reduce the overall inventory of transuranic, volatile organic compound, and uranium waste buried within the Subsurface Disposal Area
- Certify and transfer the resulting retrieved transuranic waste streams to the Waste Isolation Pilot Plant in New Mexico
- Provide information to support remedial work at the Radioactive Waste Management Complex as defined by future Comprehensive Environmental Response, Compensation and Liability Act removal action documentation, or the Operable Unit 7-13/14 Record of Decision.

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FIGURES

TABLES

ACRONYMS

AOC	area of contamination
ARAR	applicable or relevant and appropriate requirement
ARP	Accelerated Retrieval Project
ARP II	Accelerated Retrieval Project II
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	contaminant of concern
DEQ	(Idaho) Department of Environmental Quality
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
INL	Idaho National Laboratory
NCP	National Contingency Plan (i.e., National Oil and Hazardous Substances Pollution Contingency Plan)
NTCRA	non-time-critical removal action
OU	operable unit
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RFP	Rocky Flats Plant
ROD	record of decision
RWMC	Radioactive Waste Management Complex
SDA	Subsurface Disposal Area
TSCA	Toxic Substances Control Act
VOC	volatile organic compound
WAG	waste area group
WIPP	Waste Isolation Pilot Plant

Action Memorandum for the Accelerated Retrieval Project II within Pits 4 and 6 of the Subsurface Disposal Area

1. BASIS AND PURPOSE

This action memorandum documents selection of the non-time-critical removal action (NTCRA) recommended in the *Engineering Evaluation/Cost Analysis for the Accelerated Retrieval Project II* (DOE-ID 2005). The basis for selection of the Targeted Waste Retrieval alternative described in the Accelerated Retrieval Project II (ARP II) Engineering Evaluation/Cost Analysis (EE/CA) (DOE-ID 2005) is provided within this memorandum. The Targeted Waste Retrieval alternative involves retrieval of selected Rocky Flats Plant (RFP)[a] waste streams from a portion of Pits 4 and 6 within the Radioactive Waste Management Complex (RWMC) Subsurface Disposal Area (SDA) at the Idaho National Laboratory (INL). Figure 1 provides a map of the INL showing the location of the RWMC and other major Site facilities. Figure 2 provides a graphic layout of the RWMC, showing the location of Pits 4 and 6, and an expanded view of the project area.

The retrieval area lies immediately to the east of the Accelerated Retrieval Project (ARP) area in the easternmost portion of Pit 4 and a portion of the west end of Pit 6 (see Figure 2). Selecting the specific retrieval area required evaluating shipping and burial records for containerized radioactive materials and sludge from the RFP and radioactive waste generated at the INL. This evaluation considered specific high-density waste target areas (i.e., areas with high concentrations of contaminants of concern [COCs]) within the SDA. The U.S. Department of Energy Idaho Operations Office (DOE-ID), with agreement from the Idaho Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) (i.e., the Agencies), has selected the area described in Section 2.1.1 as the retrieval area. The Accelerated Retrieval Project II is referred to as the Targeted Waste Removal and Disposition Project for field implementation.

The scope of the NTCRA in this action memorandum is limited to addressing designated portions of Pits 4 and 6. Implementation of the action is one element in the overall strategy for managing risk associated with the RWMC. Operable Unit (OU) 7-13/14 comprises the comprehensive remedial investigation and feasibility study for the entire facility. Additional remedial work at the RWMC will be conducted as defined by future "Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)" (42 USC § 9601 et seq., 1980) removal action documentation and the OU 7-13/14 Record of Decision (ROD).

This action memorandum was developed in accordance with CERCLA, as amended by the "Superfund Amendments and Reauthorization Act of 1986" (Public Law 99-499, 1986), and in accordance with the "National Oil and Hazardous Substances Pollution Contingency Plan" (referred to as the National Contingency Plan) (40 CFR 300, 2004). This decision to implement the Targeted Waste Retrieval alternative is based on applicable information in the Administrative Record for OU 7-13/14.

a. The RFP is located 26 km (16 mi) northwest of Denver. In the mid-1990s, it was renamed the Rocky Flats Environmental Technology Site. In the late 1990s, it was again renamed, to its present name, the Rocky Flats Plant Closure Project.

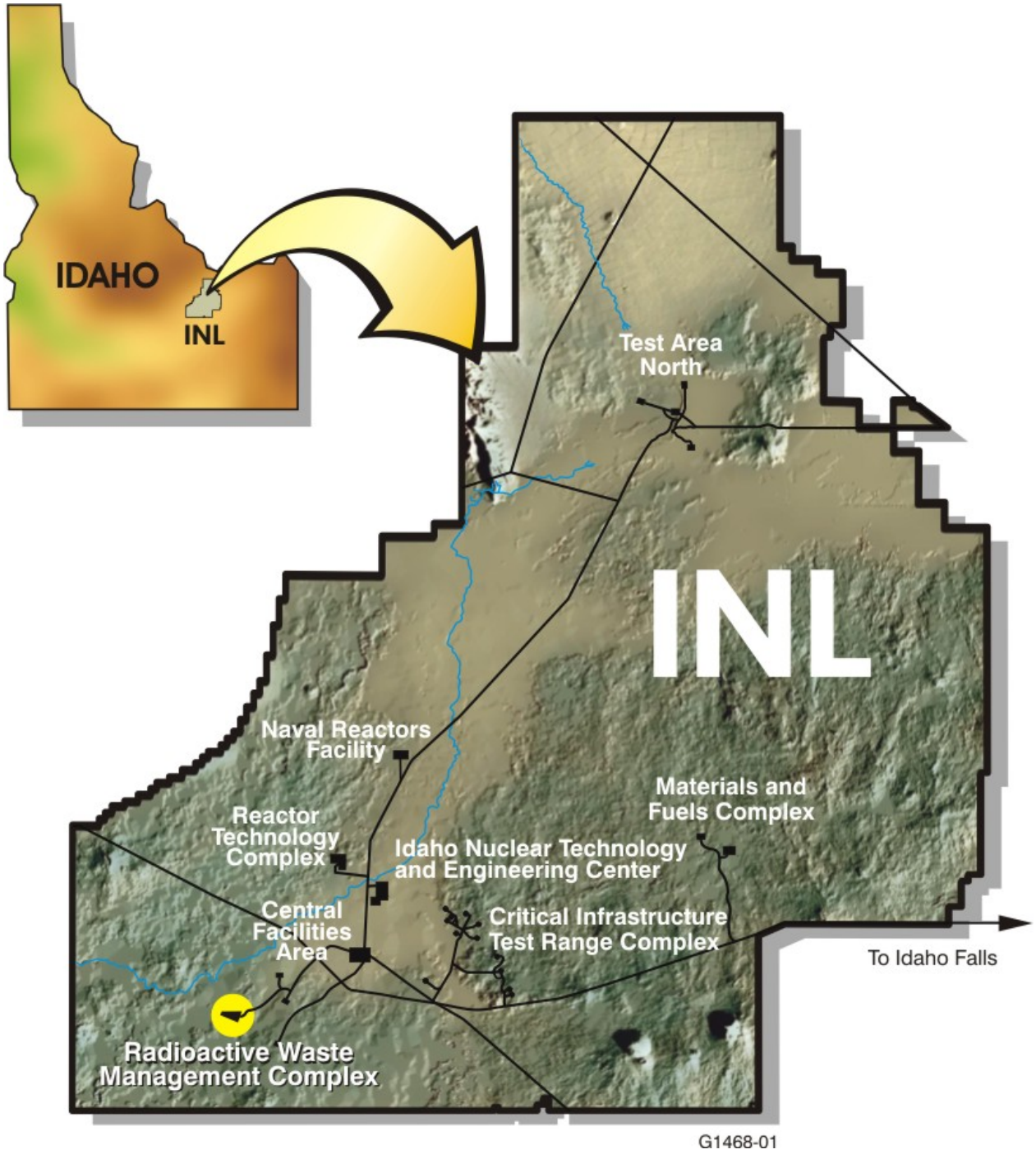

Figure 1. Map of the Idaho National Laboratory showing locations of the Radioactive Waste Management Complex and other major facilities.

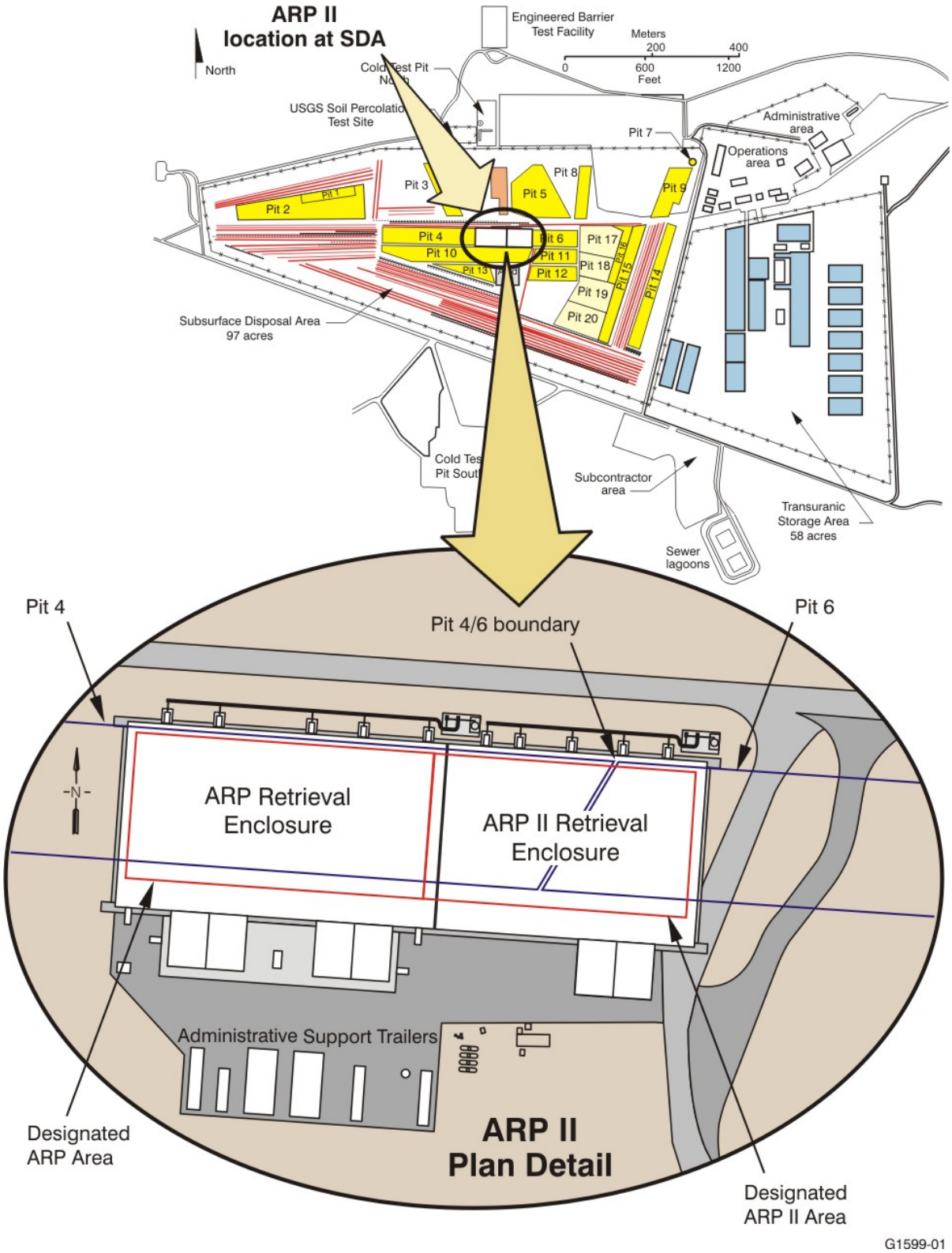

Figure 2. Map of the Radioactive Waste Management Complex showing the Accelerated Retrieval Project II Retrieval Enclosure.

2. BACKGROUND AND FACILITY DESCRIPTION

The following sections provide historical background of the SDA and the inventory of waste recorded as being buried in Pits 4 and 6. The ARP II EE/CA (DOE-ID 2005) contains further background of the operational history of the RWMC and the INL.

2.1 Source, Nature, and Extent of Contamination

The following sections describe general disposal practices in the SDA and the waste in Pits 4 and 6. See Figure 2 for the layout of the pits and trenches in the SDA.

The SDA is a radioactive waste landfill with shallow subsurface disposal units consisting of pits, trenches, and soil vaults. The buried RFP transuranic waste is located primarily in disposal Pits 1–6, Pits 9–12, and Trenches 1–10. Trenches 11–15 also may contain RFP waste. Contaminants in the SDA include chemicals, contact- and remote-handled fission and activation products, and transuranic radionuclides, which are discussed in greater detail in the next section. Waste-disposal practices and inventory estimates are presented in subsections that follow.

2.1.1 Waste Disposal Practices

Pit 4 was open to receive waste from January 1963 through September 1967. Pit 6 was opened later, receiving waste from May 1967 through October 1968. Based on the timeframe of burial in the designated portions of Pits 4 and 6 (i.e., from August 1966 to April 1968), it is expected that RFP waste within the designated retrieval area was dumped rather than stacked. Additional waste from INL waste generators and some waste from off-INL generators also were buried in the pit. The disposal process in the 1960s involved excavating an area in the SDA, with tractor-drawn scrapers, down to underlying basalt outcroppings, then backfilling and leveling the newly constructed pit floor with a layer of native soil approximately 0.6 m (2 ft) thick. Waste in drums; cardboard, wood, and metal boxes; and other containers was buried. Soil sometimes was added as an interim step when waste was being emplaced and while the pits remained open. After a large area was full, pits were backfilled and initially covered with about 1 m (3 ft) of soil, commonly referred to as overburden soil. Additional overburden soil was added, over time, to repair subsidence and promote surface drainage. The estimated overburden thickness currently over Pits 4 and 6 ranges from 1.2–2.1 m (4–7 ft). After approximately 40 years of burial, original disposal containers, including the carbon steel drums, were expected to be significantly corroded and degraded similar to drums removed from Pit 9 in early 2004 by the OU 7-10 Glovebox Excavator Method Project (DOE-ID 2004a). However, initial retrieval experience under ARP has shown that the drums may be in significantly better condition than those retrieved from Pit 9. Many drums uncovered in the initial retrieval area in Pit 4 (during ARP) are relatively intact, especially those associated with the stacked waste.

The ARP II retrieval area is located within Pits 4 and 6 (see Figure 2). The Agencies will review information collected during ongoing ARP and ARP II operations to (1) verify the use of visual criteria and instrumentation and (2) evaluate whether to refine the retrieval area. The following will be used by the Agencies as a basis for review of collected information:

- Waste location and distribution information will be compared with information for corresponding waste in the Waste Information and Location Database (e.g., compare projected drum equivalents of waste versus actual amounts retrieved)

- Coordinate information of various marker shipments (i.e., waste disposals with easily identifiable characteristics) will be compared with recorded waste-inventory information in the Waste Information and Location Database

- Data collected from targeted waste and nontargeted waste samples will be used to verify the assumption that visual identification, complemented with field instrumentation, of targeted waste is effective.

2.1.2 Estimated Waste Inventory in the Designated Retrieval Area

The OU 7-13/14 program has developed extensive information defining waste inventories buried in pits, trenches, and soil vault rows in the SDA. Disposal records and corresponding shipment information from RFP are sources of available information for disposal locations and waste type designations. The OU 7-13/14 program has developed buried-waste information-system applications to document waste-inventory type, quantity, and location. Based on this information (EDF-5447), Table 1 presents estimates of the volumes and types of RFP waste buried in the designated portion of Pits 4 and 6.

Table 1. Rocky Flats Plant waste content in the designated Accelerated Retrieval Project II area[a] of Pits 4 and 6 within the Subsurface Disposal Area.

Waste Stream	Summary Characteristics	Estimated Drum Equivalents[b]
Series 741 first-stage sludge	Salt precipitate containing plutonium and americium oxides, depleted uranium, metal oxides, and organic constituents.	615
Series 742 second-stage sludge	Salt precipitate containing plutonium and americium oxides, metal oxides, and organic constituents.	1,386
Series 743 sludge organic setups	Organic liquid waste solidified using calcium silicate (pastelike or greaselike).	3,805
Series 744 sludge special setups	Complexing chemicals (liquids) including Versenes, organic acids, and alcohols solidified with cement.	375
Series 745 sludge evaporator salts	Nitrate salt residues from solar evaporation ponds at RFP.	1,624
Combustible, noncombustible, and mixed debris	Solid, radioactively contaminated combustible debris (e.g., paper, rags, cardboard, and wood). Noncombustible debris including pipes, empty drums, glass, and sand. Some waste is contaminated with beryllium metal.	12,591[c]
Roaster oxide waste	Incinerated, depleted uranium. Primary chemical form is uranium oxide with some metal possible.	224
Graphite	Graphite molds broken into large pieces after removal of excess plutonium. Graphite fines (e.g., scarfings).	1.4
Filters	Discarded high-efficiency particulate air filters contaminated with RFP radionuclides (e.g., plutonium and americium).	757
Line-generated waste	Various types of waste removed from RFP plutonium-processing gloveboxes including glovebox gloves, combustible waste, graphite, and filters.	176

a. Approximate area as shown in Figure 2 and defined in the ARP II EE/CA (DOE-ID 2005).
b. Drum equivalents are derived from the original disposal volume divided by the volume of a 55-gal drum. Note that the majority of waste was buried in drums; however, boxes also were used for some waste streams (e.g., filters). A minor change in estimated drum equivalents relative to the information in the ARP II EE/CA resulted due to a revision of EDF-5447 to reflect corrected retrieval area coordinates.
c. Combustible, noncombustible, and mixed debris include RFP combustible debris, RFP noncombustible debris, and RFP beryllium as presented in EDF-5447.

ARP II = Accelerated Retrieval Project II
EDF = engineering design file
EE/CA = engineering evaluation/cost analysis
RFP = Rocky Flats Plant

Rocky Flats Plant waste forms contain various radiological and nonradiological contaminants. Material shipped from RFP and buried in Pits 4 and 6 included plutonium and uranium isotopes. Plutonium isotopes included Pu-238, Pu-239, Pu-240, Pu-241, and Pu-242. Uranium isotopes (i.e., U-234, U-235, U-236, and U-238) were shipped to the RWMC in the form of depleted uranium oxides. Also included in waste shipments were Am-241 and trace quantities of Np-237. The isotopes Am-241 and Np-237 are daughter products resulting from radioactive decay of Pu-241. In addition to Am-241 produced by decay of the Pu-241, Am-241 removed from plutonium during processing at the RFP was buried in Pits 4 and 6. This additional Am-241 significantly contributes to the total radioactivity in Pits 4 and 6. A number of radionuclides (e.g., Co-60, Cs-137, Sr-90, Y-90, and Ba-137), primarily from INL waste generators, also are expected in the project area. The non-RFP waste streams include radioactively contaminated combustible and noncombustible debris (e.g., contaminated equipment, metal, and a large cask) and a limited volume of sludge (e.g., evaporator bottoms).

Organic chemicals in Pits 4 and 6 include carbon tetrachloride, trichloroethylene, 1,1,1-trichloroethane, tetrachloroethylene (also called perchloroethylene), and lubricating oil. Trace amounts of Freon-113, alcohols, organic acids, and Versenes (ethylenediaminetetraacetic acid) also may be present. Inorganic chemicals in the waste include hydrated iron, zirconium, beryllium, lead, sodium nitrate, potassium nitrate, cadmium, dichromates, potassium phosphate, potassium sulfate, silver, asbestos, and calcium silicate. Table 1 describes and summarizes major waste streams from RFP that are located in the designated retrieval area. As the table shows, major waste streams consist of sludge, combustible and noncombustible debris, uranium roaster oxides, line-generated waste, graphite material, and discarded filter media.

Waste management activities will be based on information from various inventory documents identified in preceding paragraphs and additional acceptable knowledge documentation being prepared to support the NTCRA. In addition, analytical data collected during project activities will be used to determine appropriate management of waste streams.

2.2 Previous and Current Actions

Previous actions completed within the SDA that are relevant to the risk, operations, and design basis of the ARP II NTCRA are listed below:

- Performance of five early waste retrieval activities in the SDA in the 1970s and 1980s
- Installation and maintenance of fencing around the perimeter of the SDA to control unapproved access
- Installation of Type A and Type B probes to support verification of disposal records and investigate various parameters (e.g., leachate chemistry and infiltration)
- Completion of the OU 7-10 Glovebox Excavator Method Project
- Analysis and estimation of cumulative human health and ecological risks of the SDA (Holdren et al. 2002)
- Evaluation of alternatives for remediating the SDA (Zitnik et al. 2002)
- Completion of in situ grouting NTCRA of beryllium blocks within the SDA (Lopez et al. 2005).

Current actions include:

- Continued maintenance of controls at the RWMC preventing unapproved access to the SDA
- Monitoring of the waste zone, vadose zone, and aquifer
- Ongoing preparation of the OU 7-13/14 comprehensive remedial investigation/baseline risk assessment and feasibility study
- Initiation of ARP.

3. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

The National Contingency Plan (40 CFR 300.415[b]) identifies factors that must be considered in determining whether performance of a removal action is appropriate. The primary factor applicable to Pits 4 and 6 comprises the hazardous substances, pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release (40 CFR 300.415 [b][2][iii]).

As discussed in Section 2, the designated retrieval area contains numerous waste streams that contain a significant volume of hazardous substances including both radiological and chemical substances (refer to Table 1 for identification of drum equivalents of targeted waste streams). Current OU 7-13/14 risk documentation (i.e., *Ancillary Basis for Risk Analysis of the Subsurface Disposal Area* [Holdren et al. 2002]) identifies CERCLA hazardous substances within Pits 4 and 6 that are COCs. Contaminants of concern include volatile organic compounds (VOCs), uranium, and various transuranic isotopes that are contained within waste streams targeted for removal as part of the selected NTCRA.

Site-monitoring data indicate that extensive volatile organic contamination is present in the subsurface beneath the SDA. In addition, groundwater monitoring in the vicinity of the SDA has shown that carbon tetrachloride concentrations slightly exceed the Safe Drinking Water Act (42 USC 300f to 300j-26, 1974) maximum contaminant levels (Koeppen et al. 2005). Carbon tetrachloride is the focus of the treatment operations being performed by the OU 7-08 Organic Contamination in the Vadose Zone Project remedial action. Based on retrieval experience within the SDA under the OU 7-10 Glovebox Excavator Method Project and ARP, it is reasonable to expect that a significant portion of the original VOC inventory is still retained within the original containers. Removal of targeted waste streams with high concentrations of VOCs (e.g., Series 743 sludge) will help to mitigate the ongoing release of VOCs to the subsurface.

Compared to VOCs, release and migration potential of the RFP radiological COCs is much slower. In general, peak estimated aquifer concentrations for radionuclide COCs are hundreds or even thousands of years in the future. However, regardless of this slower release rate and migration potential, modeling indicates that relatively long-term migration into the subsurface will occur. Removal of targeted waste streams containing COCs will reduce the source term radiological and chemical inventory.

4. ENDANGERMENT DETERMINATION

Material located within Pits 4 and 6 contains hazardous substances that have been released to the surrounding environment and hazardous substances that pose a threat of continuing future release without remedial action (Holdren et al. 2002). Based on this ongoing release of hazardous substances and the associated threat to the environment, removal action is consistent with Section 104(a)(1) of CERCLA criteria for authorization of a CERCLA response action. The NTCRA is consistent with relevant National

Contingency Plan criteria for determining appropriateness of a removal action because the area contains "Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release" (40 CFR 300.415[b][2][iii]).

5. PROPOSED ACTIONS AND ESTIMATED COST

5.1 Proposed Actions and Objectives

The focused objective of the NTCRA is targeted retrieval of certain RFP waste streams that are highly contaminated with transuranic radionuclides, VOCs, and isotopes of uranium from the designated retrieval area (see Figure 2). To achieve this objective, the NTCRA targets removal of the following RFP waste streams: Series 741 and 743 sludge, graphite and filters contaminated with significant amounts of transuranic isotopes, and roaster oxide waste.

During the process of excavation, other types of waste could be revealed that are not targeted waste streams. This nontargeted waste also will be removed from the excavation area during this removal action if the U.S. Department of Energy (DOE) remedial project manager and the EPA and DEQ agree that retrieval is warranted. Nontargeted waste will be removed if the information about the nontargeted waste (available from visual inspection [e.g., package labeling or distinctive packaging]) or through field screening data indicates that the nontargeted waste meets the following criteria:

- Waste poses a potential risk of contamination to the underlying aquifer if left in place
- Potential risk is sufficient to warrant removal at that time rather than leaving it to be addressed by the OU 7-13/14 final remedial action for Waste Area Group (WAG) 7
- Waste can be managed safely by retrieval using the personnel, facilities, and equipment readily available at INL for retrieval of the targeted waste streams.

Performance of the Targeted Waste Retrieval alternative will remove targeted RFP waste streams from the retrieval area and will significantly reduce curies of transuranic radionuclides and uranium isotopes within the retrieval area. In addition, removal of the Series 743 sludge will significantly reduce the source of VOCs that remains in the retrieval area. The following section describes the selected alternative in greater detail.

The DOE has determined that implementation of the Targeted Waste Retrieval alternative described in the ARP II EE/CA (DOE-ID 2005) shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned. The removal action, in addition to addressing a significant portion of COCs in the retrieval area, will provide characterization and technical and cost information from full-scale waste retrieval activities that will support the remedial investigation and feasibility study for OU 7-13/14. The preliminary feasibility study work underway for OU 7-13/14 will address three types of remedial alternatives: retrieval, in situ grouting, and containment with an engineered surface barrier (Holdren and Broomfield 2004). This removal action is consistent with this range of alternatives and will not prevent future implementation of any of the alternatives evaluated.

5.1.1 Site Location

The ARP II retrieval site is located at the approximate center of the SDA within the eastern end of Pit 4 and the west end of Pit 6 (see Figure 2). The primary storage location for waste generated from ARP II is the CERCLA Storage Enclosure (see Figure 2) constructed in the SDA under ARP. Other

CERCLA storage areas may be established by DOE at RWMC, as needed, to provide additional storage capacity and waste management flexibility. Waste storage may also occur at appropriate Resource Conservation and Recovery Act (RCRA) (42 USC § 6901 et seq., 1976) -permitted storage facilities located at INL (e.g., WMF-628 located in the RWMC Transuranic Storage Area).

5.1.2 Retrieval and Storage Facilities

The Retrieval Enclosure (see Figure 3) will cover the retrieval area during retrieval operations to provide protection from adverse weather. The ARP II portion of the Retrieval Enclosure comprises the east end of the building, as shown in Figure 3. The west end of the building is the ARP Retrieval Enclosure. The Retrieval Enclosure is a temporary, relocatable structure that will house excavation, packaging, sampling, waste segregation, and personnel and equipment ingress and egress.

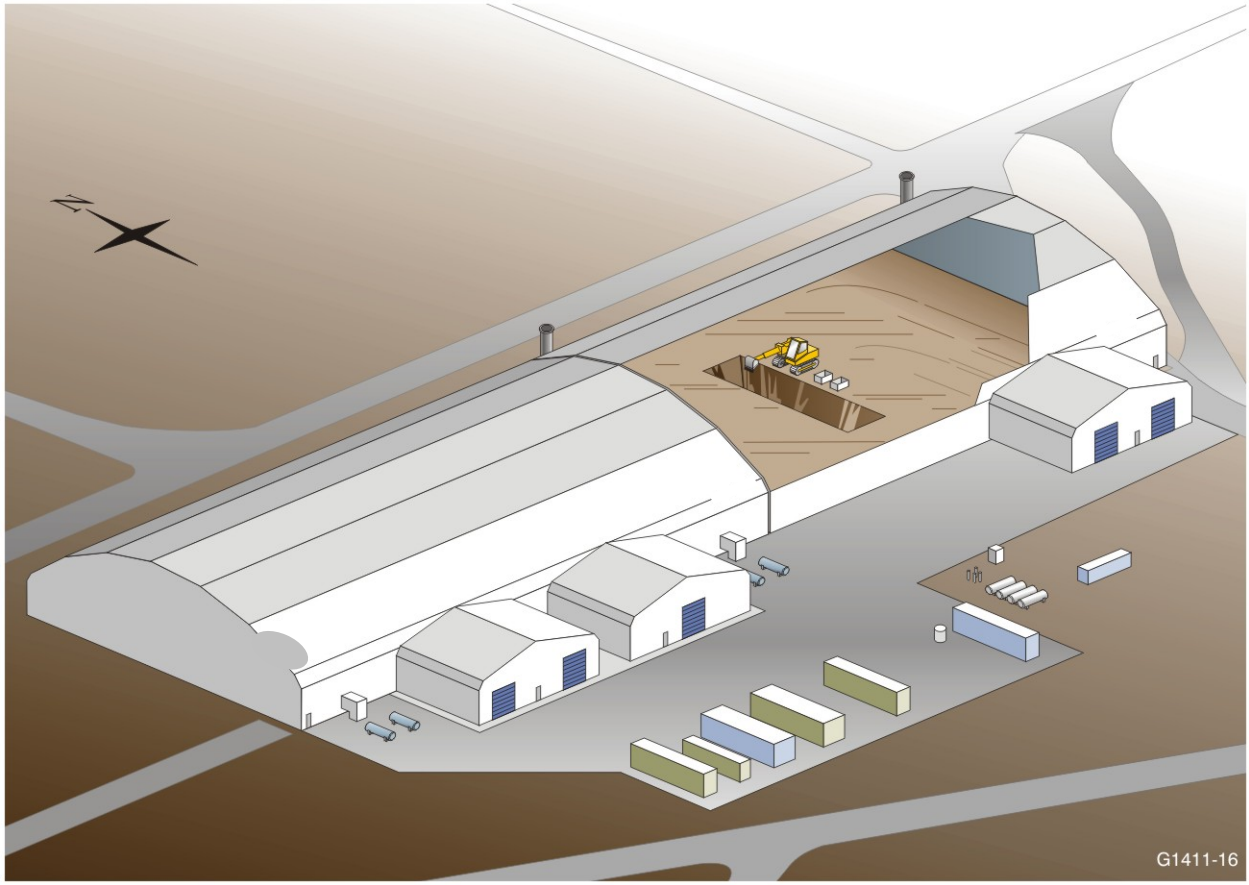

Figure 3. Accelerated Retrieval Project II Retrieval Enclosure covering the retrieval area (east end of figure).

Ventilation is provided by a high-efficiency-particulate-air-filtered exhaust system. The exhaust stack will minimize local worker exposure and permit proper monitoring of radiological emissions. The ventilation system is equipped with a radiological-emissions monitoring system.

The CERCLA Storage Enclosure provides indoor storage and staging of packaged waste for transfer to Waste Isolation Pilot Plant (WIPP) in New Mexico (see Figure 4). The CERCLA Storage Enclosure is a commercially available, fabric-tensioned structure. The interior floor is reinforced concrete. As Figure 4 illustrates, a modified dense-pack drum-storage configuration, similar to that

employed at RWMC in the RCRA-permitted Type II storage buildings, may be implemented as needed. Modified dense-pack storage involves a drum-stacking arrangement that is four drums wide by five drums high. Depth of the drum stack is limited by the size of the building and the aisle space necessary to accommodate access to the drums and access of emergency response equipment. The aisle space in the center of the building will be a minimum of 6.1 m (20 ft), with a minimum aisle space of 0.9 m (3 ft) between the rows and the perimeter of the building.

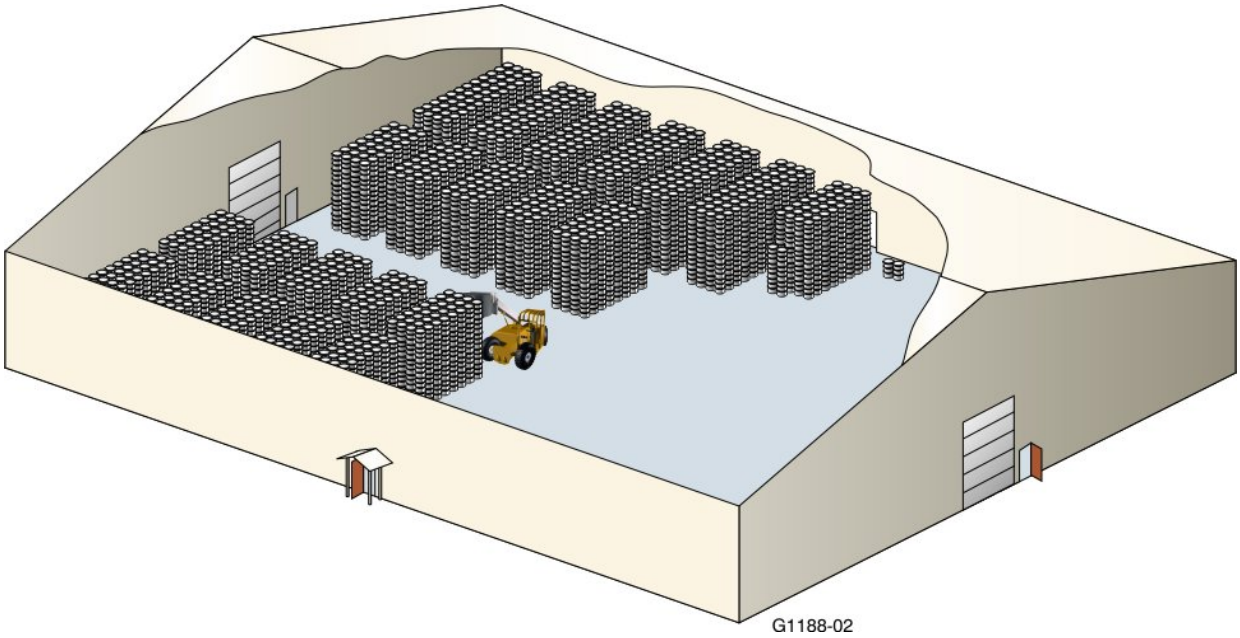

Figure 4. Comprehensive Environmental Response, Compensation and Liability Act Storage Enclosure showing an example of modified dense-pack storage.

5.1.3 Retrieval and Handling Operations

Initially, overburden soil was removed as part of construction before starting NTCRA operational activities. This soil is stockpiled within the SDA and will ultimately be reused as Pit 4 or Pit 6 overburden or as grading material elsewhere in the SDA. The remaining 0.6 m (2 ft) of overburden will be removed as the first phase of operations and will be piled or returned directly to the pit. This layer of soil, before removal, will provide a stable working surface for retrieval operations. Radiological Control requirements and evaluations implemented at RWMC will govern the actual management of overburden soil at the time of pit closure (e.g., whether the overburden is acceptable as surface cover material).

Waste-zone material will be retrieved using excavation equipment working inside the Retrieval Enclosure. Operators will retrieve and place material into trays or other equipment for subsequent examination for WIPP characterization purposes, field screening, sampling, and repackaging in new containers. Drums may be opened using hand tools or other equipment operated away from the digface (e.g., in the drum packaging stations or on specialized tables located within the Retrieval Enclosure) or through other systems including excavator end effectors. Chemical dust suppressants or water will be used within the Retrieval Enclosure to control dust and minimize the spread of radiological contamination. The pit walls may be sloped to maintain an angle of repose as needed to support safe operations.

The retrieved waste will be screened visually and with field instrumentation to assess whether the waste is targeted or nontargeted to determine its disposition. Any indication of VOC contamination,

indicative of targeted waste, that is detected by field screening will be considered targeted waste. Targeted waste will be visually examined for WIPP characterization and will be packaged appropriately for anticipated shipment to WIPP. Nontargeted waste will be placed on the opposite face of the open pit or otherwise consolidated within the Retrieval Enclosure before return to pit.

Once targeted waste has been placed in new containers, the waste will be staged temporarily in the vicinity of the Retrieval Enclosure for radiological screening assay, and then transferred to storage or to characterization.

Characterization and certification tasks will be performed at appropriate facilities (e.g., Central Characterization Project facilities at RWMC or the Advanced Mixed Waste Treatment Project facilities). Payload containers (e.g., individual drums, standard waste boxes, and 10-drum overpacks) will be assembled for transfer to WIPP in TRUPACT-II containers. Payload containers that are certified to meet waste acceptance criteria will be transported to WIPP for final disposition.

Retrieved waste materials that do not satisfy WIPP waste acceptance criteria (e.g., nontransuranic waste streams) will be characterized and evaluated for alternate treatment and disposal available at the RWMC or offsite[b] disposal facilities. Depending on waste stream characteristics, treatment of these materials may be necessary to satisfy applicable or relevant and appropriate requirements (ARARs) and other health-based or facility-specific waste acceptance criteria. Other waste streams, which are not transuranic waste (e.g., uranium roaster oxides), may require further analysis and treatment before disposal. In particular, it is expected that some portion of the materials may require treatment to reduce VOC concentrations of the materials prior to disposal. These materials will be located in a CERCLA storage facility, pending final evaluation for treatment and disposal. The DOE will give preference to disposal options that do not involve return to pit (e.g., offsite treatment and disposal) and will only consider returning to the pit types of waste that do not present unacceptable risk to the aquifer, subject to agreement with the DEQ and EPA.

Characterization activities will be implemented for selected radionuclides within nontargeted waste and underburden that is not removed as part of the removal action. Resulting data will be used by the Agencies to assess residual risk considerations and evaluate effectiveness of the planned waste-segregation approach. Documentation of data quality objectives and a field sampling plan are being prepared to define the characterization activity and will be submitted to the Agencies for review and concurrence before removal operations are started.

Hazards associated with the retrieval and packaging activities, and potential accident scenarios, have been evaluated and are identified and assessed in project safety analysis documentation. Based on the safety evaluation, appropriate safe work processes have been incorporated into the operating procedures.

5.1.4 Treatment

Treatment for constituents (e.g., VOCs) may be required for material that does not pass related waste acceptance criteria (e.g., gas-generation testing for WIPP-destined waste). Details of the potential VOC and other treatment processes will not be fully developed until a reliable estimate of the subject drum population can be developed based on retrieval and characterization experience. Both onsite and offsite treatment options are being evaluated and may be performed as part of this removal action in the future. If new VOC treatment processes are required, a public-involvement plan will be developed.

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b. For purposes of this removal action, the Idaho National Engineering and Environmental Laboratory CERCLA Disposal Facility (ICDF) is considered onsite; other locations that are outside of the RWMC are offsite.

5.1.5 Interim Closure

Final closure of the excavated area will not occur as part of the NTCRA, but will occur for the overall SDA as specified in the future OU 7-13/14 ROD. Final closure of the SDA is assumed to include an engineered surface barrier that will encompass Pits 4 and 6 (Holdren and Broomfield 2003). Interim closure steps will be implemented as part of the NTCRA, including covering the pit with a layer of soil from remaining overburden material or other native soil from the INL. The cover layer will be compacted and graded consistent with an overall SDA grading and drainage plan.

5.2 Applicable or Relevant and Appropriate Requirements

The ARARs identified for the selected NTCRA are identified in Appendix A. Implementation is discussed in the appendix. As is appropriate for a CERCLA action, substantive provisions of cited ARARs must be implemented, to the extent practicable. Specific ARAR citations and implementation information are provided in Table A-1.

The ARARs implementation for a CERCLA removal action is prescribed by the National Contingency Plan. Removal actions must ". . .to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws. . ." (40 CFR 300.415[j]). The same subsection of the National Contingency Plan further states, "In determining whether compliance with ARARs is practicable, the lead agency may consider appropriate factors, including (1) The urgency of the situation; and (2) The scope of the removal action to be conducted."

Appendix A also identifies chemical-, location-, and action-specific ARARs. Chemical-specific ARARs are usually health- or risk-based numerical values or methodologies that produce numerical values when applied to site-specific conditions. Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because of the specific locations involved. Action-specific ARARs are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous waste. These requirements are triggered by the particular remedial activities selected to accomplish the remedy.

Generation of "Toxic Substances Control Act (TSCA) of 1976" (15 USC § 2601 et seq., 1976) -regulated polychlorinated biphenyl (PCB) remediation waste is possible as part of the NTCRA. Consequently, the TSCA regulations (40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions"), which govern management, characterization, storage, treatment, and disposal requirements for PCB remediation waste, are applicable. The TSCA storage ARARs must be satisfied for any portion of the waste population identified or assumed to contain PCBs at concentrations of 50 ppm or greater. Because the CERCLA Storage Enclosure does not meet all TSCA ARAR provisions for PCB storage, compliant storage is accomplished through the risk-based storage demonstration and approval presented in Appendix A of the *Action Memorandum for Accelerated Retrieval of a Described Area within Pit 4* (DOE-ID 2004b).

5.3 Engineering Evaluation/Cost Analysis

The EE/CA (DOE-ID 2005) is contained in the Administrative Record. The EE/CA evaluated two alternatives: (1) No Action (continued monitoring) and (2) the Targeted Waste Retrieval alternative, which was selected for implementation through this action memorandum.

The DOE-ID, in line with the commitment to solicit public participation on remedial action in the *Community Relations Plan: A Guide to CERCLA Public Involvement in the Cleanup Program at the INEEL* (DOE-ID 2004c), made the ARP II EE/CA available in the Administrative Record file for OU 7-13/14 and on the Internet. The Administrative Record is located at the DOE Reading Room of the Technical Library in Idaho Falls; copies also were available at Albertsons Library at Boise State University. The ARP II EE/CA is available on the Internet at http://ar.inel.gov. In addition to public availability of the ARP II EE/CA, nine informal briefings of citizens' groups and public officials were held. Four formal public meetings were also held during March 2005 in Idaho Falls, Idaho; Twin Falls, Idaho; Boise, Idaho; and Jackson Hole, Wyoming. Comments were received through public availability of the ARP II EE/CA and through the public meetings. These comments and responses have been added to the Administrative Record file and are attached as Appendix B.

5.3.1 No Action Alternative (Monitoring)

The No Action alternative provides an environmental baseline against which impacts of the recommended removal action can be compared. Under the No Action alternative, no removal action would be taken at the SDA beyond the current Sitewide monitoring of environmental media. Buried waste, institutional controls, and monitoring at the SDA would remain as currently functioning until an appropriate remedy was selected through the OU 7-13/14 ROD. The key element of the No Action alternative evaluated in the ARP II EE/CA was implementation of the existing monitoring system from 2005 to 2020. This monitoring would occur until the final long-term monitoring program was implemented after 2020. The Year 2020 was identified as the approximate time when a long-term monitoring action would be implemented through the OU 7-13/14 ROD process. The 2020 date was assumed in order to have a basis for calculating a total cost for the No Action alternative. In actual practice, environmental monitoring will proceed until 1 year after the OU 7-13/14 ROD is finalized (Holdren and Broomfield 2004). The ROD will then specify subsequent requirements and schedule for monitoring.

The No Action alternative included only monitoring and required no direct action to treat, stabilize, or remove contaminants. This alternative included costs for monitoring of the air, vadose zone soil moisture, and aquifer for 15 years. The No Action alternative offered no reduction in toxicity, mobility, or volume of contaminants within the SDA and did not mitigate the release of COCs from the buried waste that would be addressed through the selected action.

5.3.2 Targeted Waste Retrieval Alternative

The Targeted Waste Retrieval alternative was evaluated in the ARP II EE/CA, is selected through this action memorandum, and was described in Section 5.1.

5.4 Estimated Cost

This section provides the estimated cost for the Targeted Waste Retrieval alternative as detailed in the ARP II EE/CA. Costs for the Targeted Waste Retrieval alternative are presented for the entire project life cycle (Fiscal Years 2004–2007) including management and oversight, engineering, construction, procurement, retrieval operations, transfer of waste materials to WIPP, waste storage, and interim closure. Treatment and disposal costs (except for WIPP) are not included. Existing environmental monitoring of the SDA will proceed; consequently, the $3 million in monitoring costs is included as a cost element for the NTCRA (see Table 2).

Table 2. Total estimated costs for the Targeted Waste Retrieval alternative (i.e., Accelerated Retrieval Project II).

Cost Element	Targeted Waste Retrieval Alternative[a] ($M)
Engineering	2.8
Procurement	12.1
Management and oversight	4.2
Construction	6.9
Operation and maintenance support	45.5
WIPP certification and support	107.0
Environmental monitoring	3.0
Total	181.5

a. The ARP II EE/CA (DOE-ID 2005) cost estimate was utilized to reflect predicted costs until operational experience can be used for future estimating purposes.

ARP II = Accelerated Retrieval Project II
EE/CA = engineering evaluation/cost analysis
WIPP = Waste Isolation Pilot Plant

5.5 Project Schedule

The NTCRA schedule shows facility construction completion in Fiscal Year 2006 to support commencement of retrieval operations in July 2006. The planned retrieval operational period for the project is approximately 3 years, followed by a deactivation, decontamination, and decommissioning phase. The planned duration of the retrieval operational period has increased from the original 12 months in the ARP II EE/CA largely due to the following:

- Original project schedule assumptions did not account for the need to process a large fraction of relatively intact drums;[c] consequently, additional waste-handling and processing steps (e.g., opening of individual targeted as well as nontargeted waste drums) must be performed on an increased volume of waste resulting in slower production throughput rates than originally anticipated

- The schedule includes time for removal of the common wall between the ARP and ARP II facilities to facilitate retrieval of waste in this area.

Performance of WIPP-related processing and certification activities and complete treatment or disposal of waste streams that are not WIPP-eligible are fundamental elements of the proposed NTCRA and are expected to require several years to complete, although a final schedule is not available for these work elements at this time.

c. Drums encountered during ARP have generally had sufficient structural integrity to enable handling with excavation equipment, but have significant corrosion and structural damage such that the waste must be repackaged in new drums to support waste management outside of the Retrieval Enclosure.

6. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delaying performance of the removal action significantly or accepting the No Action Alternative would not contribute to the overall OU 7-13/14 cleanup effort by removing source materials that pose a threat of ongoing release, primarily from VOCs, from the designated area. A decision to not implement the action would not actively support the goal of the Agencies to accelerate Site cleanup, and would essentially defer the decision to the future OU 7-13/14 ROD.

7. OUTSTANDING POLICY ISSUES

No outstanding policy issues are associated with this action.

8. ENFORCEMENT

The DOE-ID is conducting this removal action as the lead agency under the authority of 40 CFR 300.415, "Removal Action," of the National Contingency Plan.

9. RECOMMENDATION

This action memorandum, which serves as a decision document, was developed in accordance with CERCLA and is consistent with the National Contingency Plan. Conditions at the RWMC site meet 40 CFR 300.415(b)(2) criteria for a removal action.

The Agencies have determined that implementation of ARP II represents an appropriate step forward in the process to achieve a comprehensive remedial solution for the SDA. The ARP II NTCRA will provide an effective method for retrieving and managing the targeted waste while maintaining protection of workers, public health, and the environment. Performance of the action will satisfy the NTCRA objective for removal of targeted waste streams and associated contaminants from a portion of the SDA and will reduce the overall transuranic, VOC, and uranium inventory buried within the SDA.

10. REFERENCES

40 CFR 300, 2005, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 300.415, 2005, "Removal Action," *Code of Federal Regulations,* Office of the Federal Register.

40 CFR 761, 2005, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," *Code of Federal Regulations*, Office of the Federal Register.

15 USC § 2601 et seq., 1976, "The Toxic Substances Control Act (TSCA) of 1976," United States Code.

42 USC § 300f to 300j-26, 1974, "Safe Drinking Water Act," *United States Code*.

42 USC § 6901 et seq., 1976, "Resource Conservation and Recovery Act of 1976 (Solid Waste Disposal Act)," *United States Code*.

42 USC § 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA/Superfund)," *United States Code*.

DOE-ID, 2004a, *Remedial Action Report for the OU 7-10 Glovebox Excavator Method Project*, DOE/NE-ID-11155, Rev. 0, U.S. Department of Energy Idaho Operations Office.

DOE-ID, 2004b, *Action Memorandum for Accelerated Retrieval of a Described Area within Pit 4*, DOE/NE-ID-11179, Rev. 0, U.S. Department of Energy Idaho Operations Office.

DOE-ID, 2004c, *Community Relations Plan: A Guide to CERCLA Public Involvement in the Cleanup Program at the INEEL*, DOE/NE-ID-11149, Rev. 0, U.S. Department of Energy Idaho Operations Office.

DOE-ID, 2005*, Engineering Evaluation/Cost Analysis for the Accelerated Retrieval Project II,* DOE/NE-ID-11223, U.S. Department of Energy Idaho Operations Office.

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Holdren, K. Jean and Barbara J. Broomfield, 2003, *Second Revision to the Scope of Work for the Operable Unit 7-13/14 Waste Area Group 7 Comprehensive Remedial Investigation/Feasibility Study,* INEL-95/0253, Rev. 2, Idaho National Engineering and Environmental Laboratory.

Holdren, K. Jean and Barbara J. Broomfield, 2004, *Second Addendum to the Work Plan for the OU 7-13/14 Waste Area Group 7 Comprehensive Remedial Investigation/Feasibility Study*, DOE/ID-11039, U.S. Department of Energy Idaho Operations Office.

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Zitnik, James F., Aran T. Armstrong, Brian K. Corb, Mark H. Edens, Douglas B. Holsten, Patricia M. O'Flaherty, Janet Rodriguez, Tamara N. Thomas, Russell L. Treat, Wayne Schofield, and Kira L. Sykes, 2002, *Preliminary Evaluation of Remedial Alternatives for the Subsurface Disposal Area,* INEEL/EXT-02-01258, prepared by CH2MHILL for the Idaho National Engineering and Environmental Laboratory.

Appendix A

Applicable or Relevant and Appropriate Requirements for the Accelerated Retrieval Project II

Appendix A

Applicable or Relevant and Appropriate Requirements for the Accelerated Retrieval Project II

A-1. APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS BACKGROUND

This appendix provides identification of applicable or relevant and appropriate requirements (ARARs) for the Accelerated Retrieval Project II non-time-critical removal action (NTCRA) (i.e., Alternative Two—Targeted Waste Retrieval as described in the *Engineering Evaluation/Cost Analysis for the Accelerated Retrieval Project II* [EE/CA] [DOE-ID 2005a]). As is appropriate for a "Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)" (42 USC § 9601 et seq., 1980) action, only the substantive provisions of the cited ARARs require implementation for onsite CERCLA activities. For the purposes of this NTCRA, ARP II activities conducted at the Radioactive Waste Management Complex (RWMC), as described in this Action Memorandum, are "onsite" as defined in the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300) (hereafter referred to as the National Contingency Plan [NCP]). Specific ARAR citations and implementation information are provided in Table A-1.

Table A-1. Applicable or relevant and appropriate requirements evaluation summary for the Accelerated Retrieval Project II.

Applicable or Relevant and Appropriate Requirements or to-Be-Considered Requirements	Type	Relevancy[a]	Implementation Comments
IDAPA § 58.01.01.585, "Toxic Air Pollutants Non-Carcinogenic Increments" IDAPA § 58.01.01.586, "Toxic Air Pollutants Carcinogenic Increments"	Chemical	A	Requirements of the Idaho toxic air pollutants standards have been determined to be applicable because carcinogenic and noncarcinogenic air contaminants may be present. The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated and controlled, if necessary, based on estimated emissions.
IDAPA § 58.01.01.577, "Idaho Ambient Air Quality Standards for Specific Air Pollutants"	Chemical	A	These standards establish ambient air quality standards for particulate matter, sulfur oxides, ozone, nitrogen dioxide, fluorides and lead. Project air emissions estimates must provide a basis for assessing compliance with the standards.
National emission standards for emissions of radionuclides other than radon from DOE facilities 40 CFR 61.92, "Standard" 40 CFR 61.93, "Emission Monitoring and Test Procedures" 40 CFR 61.94, "Compliance and Reporting"	Chemical	A	Emission of radionuclides to the ambient air from DOE facilities will not exceed those amounts that would cause any member of the public to receive, in any year, an effective dose equivalent to 10 mrem/year (40 CFR 61.92). Project air emissions estimates must provide a basis for assessing compliance with the substantive standards.

Table A-1. (continued).

Applicable or Relevant and Appropriate Requirements or to-Be-Considered Requirements	Type	Relevancy[a]	Implementation Comments
16 USC § 470, "National Historic Preservation Act of 1966"	Location	RA	The National Historic Preservation Act covers a variety of historic properties (e.g., buildings, structures, archaeological sites, Native American resources, and significant artifacts). The law requires that properties of this type be identified before disturbance by any federal undertaking, including cleanup activities under CERCLA. Implementation of associated substantive requirements will be coordinated with the INL Cultural Resources Office personnel if archaeological remains or other artifacts are encountered during overburden removal activities.
IDAPA § 58.01.01.650, "Rules and Standards for Air Pollution Control" IDAPA § 58.01.01.651, "Rules for Control of Fugitive Dust: General Rules"	Action	A	The fugitive dust requirements are applicable if fugitive dust is generated during remediation or construction activities.
IDAPA § 58.01.01.625, "Visible Emissions"	Action	A	Discharge of any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than 3 minutes in any 60-minute period, which is greater than 20% opacity, is prohibited.
IDAPA § 58.01.05.006, "Standards Applicable to Generators of Hazardous Waste" 40 CFR 262.11, "Hazardous Waste Determination"	Action	A	Performance of an appropriate hazardous waste determination is required for waste that is newly generated.
IDAPA § 58.01.05.008, "Standards For Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities" 40 CFR 264, Subpart I, "Use and Management of Containers"	Action	A	Container storage areas for containers of hazardous waste will be managed in compliance with Subpart I requirements as modified by the modified dense-pack storage arrangement that will be implemented. Container inspection provisions appropriate for the modified dense-pack arrangement will be implemented through inspection checklists and project-specific procedures.

Table A-1. (continued).

Applicable or Relevant and Appropriate Requirements or to-Be-Considered Requirements	Type	Relevancy[a]	Implementation Comments
IDAPA § 58.01.05.008, "Standards For Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities" 40 CFR 264.13, "General Waste Analysis," (a)(1)(2) 40 CFR 264.15, "General Inspection Requirements," (a)(c) 40 CFR 264.17, "General Requirements for Ignitable, Reactive, or Incompatible Wastes" (a)(b)	Action	A	Substantive provisions of the RCRA general facility standards will be implemented as ARARs for the CERCLA storage enclosure. Waste analysis requirements will be implemented through generation of a CERCLA field sampling plan defining required characterization for management of the CERCLA waste retrieved during project activities as well as through available acceptable knowledge documentation. Substantive inspection requirements will be implemented as appropriate for the CERCLA storage enclosure. Inspection areas and frequencies will be documented in project-specific procedures.
IDAPA § 58.01.05.008, "Standards For Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities" 40 CFR 264.31, "Design and Operation of Facility" 40 CFR 264.32, "Required Equipment" 40 CFR 264.33, "Testing and Maintenance of Equipment" 40 CFR 264.34, "Access to Communications or Alarm System" 40 CFR 264.35, "Required Aisle Space"	Action	A	The listed substantive requirements of Subpart C will be implemented for the CERCLA storage enclosure, as is appropriate for the CERCLA waste being managed at the site. Appropriate emergency equipment and communications systems will be provided to support the facility. Aisle-space requirements will be implemented consistent with those for the modified dense-pack storage configuration used in the RCRA-permitted, Type II storage buildings located in the RWMC Transuranic Storage Area. Definition of required equipment and procedures for implementation of Subpart C will be documented in the subsequent project-specific documentation and procedures.
IDAPA § 58.01.05.008, "Standards For Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities" 40 CFR 264, Subpart X, "Miscellaneous Units" 40 CFR 264.600, "Applicability" 40 CFR 264.601, "Environmental Performance Standards" 40 CFR 264.602, "Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action" 40 CFR 264.603, "Post-closure Care"	Action	A	Subpart X is identified as an ARAR for the thermal treatment system, if implemented in the future. As part of Subpart X implementation, additional substantive ARAR provisions deemed necessary to protect human health and the environment will be identified through consultation among DOE, DEQ, and EPA (i.e., the Agencies) representatives as part of the removal action treatment design process. Additional ARARs for consideration include provisions of Subparts I through O and Subparts AA through CC of 40 CFR 264; 40 CFR 270, "EPA Administered Permit Programs: the Hazardous Waste Permit Program"; 40 CFR 63, and Subpart EEE that are appropriate for the miscellaneous unit (i.e., thermal treatment unit) and the site-specific circumstances of the CERCLA action.

Table A-1. (continued).

Applicable or Relevant and Appropriate Requirements or to-Be-Considered Requirements	Type	Relevancy[a]	Implementation Comments
ICAPA § 58.01.05.011, "Land Disposal Restrictions" 40 CFR 268.40, "Applicability of Treatment Standards" 40 CFR 268.44, "Variance from a Treatment Standard" 40 CFR 268.45, "Treatment Standards for Hazardous Debris" 40 CFR 268.48, "Universal Treatment Standards" 40 CFR 268.49, " Alternative LDR Treatment Standards for Contaminated Soil"	Action	A	These requirements are applicable to the treatment and disposal of RCRA hazardous waste if placement of restricted waste occurs.
"The Toxic Substances Control Act (TSCA)" (15 USC § 2601 et seq., 1976) 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions"	Action	A	The substantive provisions of The Toxic Substances Control Act (TSCA) (15 USC § 2601 et seq., 1976) regulations governing management, characterization, storage, treatment, and disposal requirements for PCB remediation waste are applicable. Inventory information indicates that a potential exists for PCB contamination in the Pits 4 and 6 waste inventory at concentrations above the TSCA regulatory threshold for PCBs (i.e., 50 ppm or greater). Documentation of a risk-based storage approval under 40 CFR 761.61(c), "PCB Remediation Waste," for the ARP CERCLA storage enclosure, is included as part of the ARP Action Memorandum (DOE-ID 2004).
DOE Order 435.1, "Radioactive Waste Management" DOE Manual 435.1-1, "Radioactive Waste Management Manual"	Action	To be considered guidance	The objective of DOE Order 435.1 is to ensure that all DOE radioactive waste is managed in a manner that is protective of the worker, public health and safety, and the environment. DOE Manual 435.1-1, establishes specific responsibilities for implementing radioactive waste management practices for DOE's high-level waste, transuranic waste, low-level waste, and the radioactive component of mixed waste. Pits 4 and 6 comprise a past disposal site rather than a new radioactive waste disposal facility. Therefore, the substantive low-level waste disposal requirements contained in that order and manual do not apply to the pit. The substantive requirements in DOE Order 435.1, other than the disposal requirements (e.g., storage requirements), will apply and require implementation to relevant radioactive waste management activities.

Table A-1. (continued).

Applicable or Relevant and Appropriate Requirements or to-Be-Considered Requirements	Type	Relevancy[a]	Implementation Comments
DOE Order 5400.5, "Radiation Protection of the Public and the Environment"	Action and chemical	To be considered guidance	DOE Order 5400.5 establishes standards for DOE operations with respect to protection of the public and the environment against undue risk from radiation. DOE Order 5400.5 sets limits for the annual effective dose equivalent for relevant pathways of exposure.

a. Relevancy refers to the type of requirement: A = applicable, RA = relevant and appropriate

ARAR = applicable or relevant and appropriate requirement
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
DEQ = (Idaho) Department of Environmental Quality
DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
INL = Idaho National Laboratory
PCB = polychlorinated biphenyl
RCRA = Resource Conservation and Recovery Act
RWMC = Radioactive Waste Management Complex
TSCA = Toxic Substances Control Act

Implementation of ARARs for a CERCLA removal action is prescribed by the NCP. Removal actions must ". . .to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws" (40 CFR 300.415[j]). The same subsection of the NCP further states, "In determining whether compliance with ARARs is practicable, the lead agency may consider appropriate factors, including: (1) The urgency of the situation; and (2) The scope of the removal action to be conducted." Consideration of these factors is discussed in the following sections relative to the identification of appropriate ARARs for this NTCRA.

A-2. CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Chemical-specific ARARs identified in Table A-1 for this NTCRA are primarily limited to ARARs controlling air emissions from the RWMC site. Examples of chemical-specific ARARs that will be attained through the NTCRA include the requirements of Idaho's toxic air pollutant standards for releases of carcinogenic and other hazardous chemicals to the ambient air. For radionuclide emissions, the requirements of "National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities" (40 CFR 61, Subpart H) will apply. The provisions of Subpart H limit the effective dose equivalent from all U.S. Department of Energy (DOE) Idaho National Laboratory (INL) facilities to a level of 10 mrem/year.

It is noted that the chemical-specific ARARs of the Idaho groundwater quality rules and associated maximum contaminant levels (IDAPA § 58.01.11, "Ground Water Quality Rule") are anticipated to be ARARs for the comprehensive Operable Unit (OU) 7-13/14[d] remedy, but are not relevant and appropriate to the limited scope of this NTCRA. This conclusion is based on the limited scope of the NTCRA in the context of the overall OU 7-13/14 program. As stated in the *CERCLA Compliance with Other Laws Manual: Interim Final* (EPA 1988) ". . .a removal action may be conducted to remove a large number of leaking drums and associated contaminated soil. In this situation, because the removal focuses only on partial control, chemical-specific ARARs for groundwater restoration would not be considered." Other chemical-specific ARARs are presented in Table A-1.

d. Operable Unit 7-13/14 comprises the comprehensive RI/FS for the entire RWMC.

A-3. LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Location-specific requirements that may apply to the action relate to cultural resource requirements, such as those from the National Historic Preservation Act. Although the Subsurface Disposal Area (SDA) is a disturbed area with prior clearance, the associated regulations are considered ARARs, and substantive provisions must be addressed if archaeological remains are encountered during excavation of overburden soil.

A-4. ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Substantive Resource Conservation and Recovery Act (RCRA) (42 USC § 6901 et seq., 1976) requirements of waste generators for hazardous waste identification and management would be applicable to waste that is retrieved or generated as part of the action. Generally, it is assumed that waste forms from RFP will be associated with various listed and characteristic hazardous waste numbers based on similarity to the Radioactive Waste Management Complex (RWMC) RFP stored waste. The area of contamination (AOC) for Waste Area Group (WAG) 7 has not been formally defined in CERCLA documentation under the INL *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991). For the purposes of this NTCRA, the AOC encompasses the SDA as bounded by the flood control dike that surrounds the SDA perimeter. As defined in Superfund Land Disposal Restrictions Guide #5: *Determining When Land Disposal Restrictions (LDRs) are Applicable to CERCLA Response Actions* (OSWER Directive 9347.3-05FS), an AOC is delineated by the areal extent (or boundary) of contiguous contamination. Such contamination must be continuous, but may contain varying types and concentrations of hazardous substances. The AOC does not include any contaminated surface or groundwater that may be associated with the land-based waste source. Accordingly, the SDA AOC designation for this NTCRA is based on the presence of a continuous plume of volatile organic contamination in the SDA subsurface. Although this continuous volatile organic contaminant plume extends beyond the SDA boundary, the AOC is limited to the confines of the SDA for the purposes of implementing this NTCRA.

The requirements for storage (40 CFR 264, Subpart I) are identified as ARARs to address the interim storage of containerized waste within the project area of contamination. The storage duration likely will exceed 1 year. The planned storage facility will satisfy the substantive Subpart I requirements for storage of solid waste forms. If liquid-containing waste requires storage, the project will need to implement appropriate containment provisions (e.g., use spill pallets). The need to implement RCRA ARARs will be based on the hazardous waste determination that will be completed before implementation of the action. Storage ARARs do not require implementation for waste temporarily being staged, following repackaging in association with performance of screening assay steps, before the repackaged waste is transferred to the CERCLA storage area for storage.

The RCRA land disposal restrictions prohibit placement of restricted RCRA hazardous waste in land-based units (e.g., landfills, surface impoundments, and waste piles) until treated to standards considered protective for disposal. Specific treatment standards are included in requirements. These requirements are applicable to the treatment and disposal of RCRA hazardous waste if placement of restricted waste occurs. The land disposal restrictions do not apply to materials disposed of at the Waste Isolation Pilot Plant (WIPP) in New Mexico, based on the "WIPP Land Withdrawal Act" (Public Law 102-579, 1992) exemption. The land disposal restrictions generally will apply to treated waste, secondary waste streams, other waste that is RCRA listed, or characteristic waste that is disposed of at offsite treatment, storage, and disposal facilities. Consistent with the approach documented in the

ARP Removal Action Plan (DOE-ID 2005b), various inert materials will be used within the enclosure to support retrieval. These materials may be disposed of in the pit. Potential for future subsidence shall be evaluated at the time of deposition, and the location will be recorded.

The RCRA closure requirements for landfills are not considered ARARs for the limited scope of the removal action. As referenced above, the limited scope of the removal action can be considered in determining whether an ARAR is practicable for implementation in a removal action context. In the case of the Targeted Waste Retrieval alternative, the DOE has determined that implementation of closure ARARs is not practicable. Implementation of closure requirements and associated monitoring provisions is not meaningful, considering the limited portion of the overall landfill (i.e., SDA) being retrieved and considering that final closure ARARs for the facility will be satisfied through the OU 7-13/14 Record of Decision (ROD). It is not possible to construct a meaningful closure scenario for the retrieved area considering the scope of the retrieval and the magnitude of surrounding existing waste forms that are not addressed by the action.

The thermal treatment process to be potentially employed for treatment of volatile organic compounds (VOCs) would be subject to substantive ARARs as a miscellaneous unit under RCRA. As part of Subpart X (40 CFR 264) implementation, additional substantive ARAR provisions deemed necessary to protect human health and the environment will be identified through consultation among U.S. Department of Energy, Idaho Department of Environmental Quality, and U.S. Environmental Protection Agency representatives as part of the removal action treatment design process. Additional ARARs for consideration include provisions of the following that are appropriate for the thermal treatment unit and the site-specific circumstances of the CERCLA action:

- Subparts I through O and Subparts AA through CC of 40 CFR 264
- 40 CFR 270, "EPA Administered Permit Programs: the Hazardous Waste Permit Program"
- 40 CFR 63 Subpart EEE.

The "Toxic Substances Control Act (TSCA) of 1976" (15 USC § 2601 et seq., 1976) regulations of "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions" (40 CFR 761) governing management, characterization, storage, treatment, and disposal requirements for PCB remediation waste are applicable. Inventory information indicates that a potential exists for PCB contamination in the Pits 4 and 6 waste inventory may be at concentrations above the TSCA regulatory threshold for PCBs (i.e., 50 ppm or greater). The TSCA storage ARARs will need to be satisfied for any portion of the waste population identified to contain PCBs at 50 ppm or greater. This is accomplished through the risk-based storage approval in Appendix A of the *Action Memorandum for Accelerated Retrieval of a Described Area within Pit 4* (DOE-ID 2004), as is allowed by "PCB Remediation Waste" (40 CFR 761.61[c]). In the event that excavated waste-zone materials are identified to contain PCBs greater than or equal to 50 ppm, the materials will not be eligible for return to the pit without supporting risk-based disposal approval. Disposal of these potential materials will be addressed in future documentation.

The State of Idaho regulations for fugitive dust emissions are applicable to fugitive dust generated during remediation or construction activities. In addition, State of Idaho visible-emission standards are identified as ARARs. The requirements prohibit discharge of any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than 3 minutes in any 60-minute period that is greater than 20% opacity.

Relevant substantive requirements of DOE Order 5400.5, "Radiation Protection of the Public and the Environment," and DOE Order 435.1, "Radioactive Waste Management," which specify DOE radiation protection and management requirements, would be met as to-be-considered requirements.

A-5. REFERENCES

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40 CFR 264, Subpart I, 2005, "Use and Management of Containers," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264, Subpart J, 2005, "Tank Systems," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264, Subpart K, 2005, "Surface Impoundments," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264, Subpart L, 2005, "Waste Piles," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264, Subpart M, 2005, "Land Treatment," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264, Subpart N, 2005, "Landfills," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264, Subpart O, 2005, "Incinerators," *Code of Federal Regulations*, Office of the Federal Register.

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40 CFR 264, Subpart CC, 2005, "Air Emission Standards for Tanks, Surface Impoundments, and Containers," *Code of Federal Regulations*, Office of the Federal Register.

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40 CFR 264.13, 2005, "General Waste Analysis," *Code of Federal Regulations*, Office of the Federal Register.

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40 CFR 264.32, 2005, "Required Equipment," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.33, 2005, "Testing and Maintenance of Equipment," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.34, 2005, "Access to Communications or Alarm System," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.35, 2005, "Required Aisle Space," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.600, 2005, "Applicability—Standards for Operators and Owners of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.601, 2005, "Environmental Performance Standards," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.602, 2005, "Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action," *Code of Federal Regulations*, Office of the Federal Register.

40 CFR 264.603, 2005, "Post-Closure Care," *Code of Federal Regulations*, Office of the Federal Register.

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Appendix B

Summary of Public Involvement Activities

Appendix B

Summary of Public Involvement Activities

B-1. SUMMARY OF PUBLIC INVOLVEMENT ACTIVITIES

During the public comment period, six individuals and groups provided a total of 40 written and oral comments. Public meetings were conducted in Idaho Falls, Twin Falls, and Boise, Idaho, and Jackson Hole, Wyoming. The public comment period began March 1, 2005, and ended March 30, 2005. Public comments received during the 30-day public comment period are listed in Table B-1, and corresponding responses to each of those comments are also listed in Table B-1.

General public support for the proposed removal of waste from the Subsurface Disposal Area (SDA) was evident through review of the comments. The majority of commenters share the paramount Agency (i.e., U.S. Department of Energy [DOE], Idaho Department of Environmental Quality [DEQ], and U.S. Environmental Protection Agency [EPA]) objective to ensure protection of the Snake River Plain Aquifer through effective cleanup actions at the Radioactive Waste Management Complex (RWMC). Divergence of opinion was evident regarding some implementation details associated with the action including the extent of waste removal and specifics of the retrieval process. Considerable public inquiry also was focused on measures to be taken to ensure regulatory compliance and to ensure worker and public safety. Future Agency efforts will be focused on ensuring that the action achieves the removal action objectives, is consistent with the overall Waste Area Group (WAG) 7 program, and is implemented in a manner that is protective of human health and the environment and protective of workers who are in the field implementing the action.

Table B-1. Responses to public comments submitted on the *Engineering Evaluation/Cost Analysis for the Accelerated Retrieval Project II* (DOE-ID 2005a).

Comment No.	Comment/Issue	Resolution
1	Although I am pleased that the DOE is actually taking dangerous nuclear contamination out of the burial ground at the Idaho site, I am worried that no further waste will be removed after the ARP is completed. It is my hope that the final ROD will include removal of waste left in the ground after the ARP is complete.	The decision being evaluated through the review of the *Engineering Evaluation/Cost Analysis for the Accelerated Retrieval Project II* (DOE-ID 2005a) is whether to proceed with ARP II. Separate risk management decisions for all waste streams in the entire landfill will be developed jointly by DOE, DEQ, and EPA (i.e., the Agencies), as required by the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC § 9601 et seq., 1980) process, through preparation of the OU 7-13/14 comprehensive RI/FS and OU 7-13/14 ROD. Based on current planning, a broad range of remedial alternatives will be assessed in the feasibility study including full retrieval, treatment, and disposal, and other alternatives that would leave waste in place. All alternatives include installation of a surface barrier. The preferred alternative will be based on evaluation of the nine CERCLA criteria as required by the NCP (40 CFR 300) and is required to provide both short and long-term protection of human health and the environment.
2	We were told at the hearing that workers found intact drums of waste in the area they were digging, and that these drums were broken open in the pit, the contents examined and that only the targeted waste was removed, the rest being left in the pit where it was mixed with the surrounding dirt. I recommend that the methods for the ARP, both in its present phase and in phase 2 be modified to include the capability of removal and interim storage of intact waste drums found in the pit. This will increase the amount of waste removed from the ground during this project, and decrease the amount of previously contained waste stored in drums from being mixed with the surrounding dirt, thus increasing its level of contamination. A mechanism can be provided for removing the intact drums, storing them safely and later characterization can determine the disposition of the drum and its contents. It is possible for the intact drums, if their contents qualify for WIPP, to be overpacked in a larger drum for eventual shipment to WIPP. Those that do not qualify can be overpacked and stored safely above ground in monitored storage facilities.	A number of modifications are being introduced for use in the NTCRA. First, the approach to opening intact drums will be modified. Drums may be opened using hand tools or other equipment operated away from the digface (e.g., drum packaging stations or on specialized tables located within the Retrieval Enclosure) or through other systems including excavator end effectors. As planned, these alternate methods will minimize the mixing of waste with soil and will significantly reduce the spread of radiological contamination within the enclosure. The objective of this removal action is focused on removing the targeted waste streams from the designated portion of Pits 4 and 6 rather than removal of all waste streams. As planned, the action will remove the waste streams that contain a significant portion of the COCs. These COCs include VOCs, uranium, and transuranic radionuclides including plutonium. While removing the majority of the COCs, the proposed approach does leave both chemical and radiological residuals in the pit. A significant amount of risk assessment work has been completed to date and is part of the administrative record file for WAG 7. The primary document is the ABRA (Holdren et al. 2002) referred to in the ARP II EE/CA (DOE-ID 2005a) for this proposed action. Based on this and other documentation, the Agencies have proposed a removal action that addresses the COCs located in RFP waste buried in Pits 4 and 6. Consequently, it is concluded that the proposed removal approach, when combined with implementation of the final action for WAG 7, will be protective of human health and the environment. Final evaluation of the comprehensive risk for the site and the full range of associated remedial options will be documented in the OU 7-13/14 ROD.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
3	The above suggestion does not contradict one of the goals of the ARP which is to determine if the data being used to find the targeted waste is reliable. Any untargeted waste removed from the ground, whether in intact drums or not, will provide more data for future clean up once it is characterized. Additional clean up activities required by the final ROD will therefore be more efficient because of the additional data and the removal of intact drums now.	In response to public concerns, the Agencies have implemented sampling and analysis activities that will provide characterization information on nontargeted waste that will remain in the pit. The combination of these characterization data, existing waste-inventory data, and additional characterization data gathered through separate WAG 7 programs (e.g., the instrumented probing programs), will provide sufficient information to adequately evaluate the residual risks and appropriate remedial alternatives associated with the nontargeted waste streams left in Pits 4 and 6 and the waste in other areas in the SDA that are not being addressed through the proposed NTCRA.
4	I suggest that you include in your formulation of expectations process a bit of wishful thinking. If you had hoped to find intact drums, perhaps you would have made provisions for dealing with them in a manner more productive that simply breaking them open and spreading their contents in the dirt. You may not always find the waste in a state you prefer to find it, but if you are prepared to find it in good condition we'll get more of the contaminants out of the ground faster. That is the most important point, now isn't it!	A number of modifications are being implemented in ARP II including modifications to the manner in which intact drums are opened. As planned, these alternate methods will minimize the mixing of waste with soil and will significantly reduce the spread of radiological contamination within the enclosure.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
5	Keep Yellowstone Nuclear Free (KYNF) would like to see all available exploratory data which proves that indeed Pits 4 & 6 truly contain the most toxic constituents of all the pits, trenches and soil vaults in the complex.	Current and proposed retrievals in Pits 4 and 6 are focused only on buried RFP waste. The location for these retrievals was based on an assessment that compared various areas in the SDA containing high densities of RFP waste. The criteria used to evaluate the areas included total transuranic (curies), total VOC waste, implementability, cost, and schedule. Pits 4 and 6 do contain areas with some of the highest densities of targeted RFP transuranic waste and VOCs. Exploratory data are limited to field surveys and data collected from probes that were installed in the east end of Pit 4 and in the central part of Pit 6. These data are presented in several reports available in the Administrative Record: Holdren, K. Jean, Bruce H. Becker, Nancy L. Hampton, L. Don Koeppen, Swen O. Magnuson, T. J. Meyer, Gail L. Olson, and A. Jeffrey Sondrup, 2002, *Ancillary Basis for Risk Analysis of the Subsurface Disposal Area*, INEEL/EXT-02-01125, Rev. 0. Josten, N., 2005a, *Type A Nuclear Logging Data Acquisition and Processing for Operable Units 7- 13/14 and 7-10*, INEEL/EXT-02-00558, Rev. 2. Josten, Nick, 2005b, *Surface Geophysics and Downhole Geophysical Logging Results for the Radioactive Waste Management Complex, 2003-2004*, ICP/EXT-04-00702. Josten, Nicholas E., 2002, *Compilation of Analytical Notes and Data Analyses for the Integrated Probing Project 1999-2002*, INEEL/EXT-02-01306, Rev. 0. Myers, Dennis R., Joel M. Hubbell, Nicholas Josten, Don L. Koeppen, Peter Martian, Paul D. Ritter, Michael S. Roddy, Hopi Salomon, and Jeffrey A. Sondrup, 2003, *Fiscal Year 2002 Summary Report for the OU 7-13/14 Probing Project*, INEEL/EXT-03-00001, Rev. 0. Myers, Dennis R., Joel M. Hubbell, Nicholas Josten, L. Don Koeppen, Paul D. Ritter, Hopi Salomon, A. Jeffrey Sondrup, Deborah L. McElroy, and Carolyn W. Bishop, 2004, *Fiscal Year 2003 Summary Report for the OU 7-13/14 Probing Project*, ICP/EXT-04-00189, Rev. 0. In addition to field surveys and probe data, shipping and disposal records are critical sources of information applied in selecting Pits 4 and 6. The Agencies used these data sources to identify Pits 4 and 6 for retrieval.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
6	We would further like to know what the long-term plan is to clean these other pits up at the RWMC, and the methodology to be used. Please include all stages of the clean-up cycle including after-treatment.	The current plan is to develop risk management decisions for the RWMC using the CERCLA process. Decisions will be developed jointly by the Agencies. The long-term plan will not be determined until a ROD is developed. In the meantime, a feasibility study is being prepared in accordance with CERCLA to provide a basis for those decisions. Alternatives currently being evaluated in the feasibility study include engineered surface barriers, in situ grouting, and retrieval. The appropriate treatment method will be determined after a significant and representative volume of waste needing treatment has been identified.
7	These pits sit forty feet below the elevation of the Big Lost River, so what measures are being taken to anticipate a flood or like event?	Detailed flood-routing analyses have been performed that concluded that the Big Lost River does not pose a flood threat to the SDA. Although the Big Lost River is located at a higher elevation, the river is topographically isolated from the SDA. Big Lost River flows have not entered the SDA since operations began in 1952. Flooding in the SDA has been a result of local runoff from a combination of snowmelt, rain, and warm winds melting snow pack. Dikes and drainage channels have been constructed around the SDA to provide drainage and flooding controls (Holdren et al. 2002).
8	KYNF has as its primary mission to protect the public from toxic nuclear and hazardous waste emissions. We expect the DOE to consider every nonthermal and closed-loop treatment option it has to treat [waste] exhumed from these pits.	The majority of waste exhumed from Pits 4 and 6 is targeted waste that will not require treatment to support transfer to WIPP. It is expected that the targeted waste generally will satisfy the WIPP waste acceptance criteria without treatment. The treatment process for the subset of waste that potentially requires treatment has not been selected at this time. As stated in the ARP II EE/CA (DOE-ID 2005a), system design and operational parameters for any required treatment systems are not being developed until a better understanding is reached about the waste population that may require treatment (e.g., volume of waste not meeting waste acceptance criteria and constituents requiring treatment). The DOE is also considering treatment capabilities that exist and may opt to transport the waste requiring treatment to an offsite facility. The most effective course of action will be better understood when the population of waste requiring treatment is better defined.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
9	KYNF is concerned that this method of verbal [visual] inspection, or "cherry picking" has a great margin of error for determining the target from non-target waste due to the length of time the waste has been packed in these subterranean pits and the leaking, leaching that has transpired during this time.	To best understand why the visual segregation technique for removing targeted waste was chosen, the range of waste types buried in the pits must be considered, as well as the unique visual characteristics possessed by the targeted and nontargeted waste. Considering physical form, there are five primary types of waste in the pits: (1) graphite, (2) filters, (3) uranium roaster oxide, (4) debris, and (5) sludge. Waste types (1)–(3) are types of targeted waste and possess physical features and packaging requirements that generally make identification straightforward. One modification to be introduced is the use of radiological- and chemical-field screening instrumentation to assist in the targeted waste and nontargeted waste segregation step. Use of field screening will help to "fingerprint" waste types based on available chemical and radiological characteristics that are associated with the various types of waste within the pit, and will be implemented to supplement the visual screening technique.
10	How is this project considered "Non-time critical" when the waste is leaching into the Snake River Aquifer?	The NCP defines three types of removal actions: (1) emergency, (2) time-critical, and (3) non-time critical. Emergency removals must be initiated within hours or days, in response to acute problems. These emergency situations may involve fires or explosions, imminent contamination of a water supply, or the release or imminent release of hazardous substances. Time-critical removals respond to releases requiring onsite action within 6 months. Non-time-critical removals respond to releases where a planning period of at least 6 months is available before onsite activities must begin, and the need is less immediate. The categorization of a removal into one of these three types is based largely on the urgency of the situation. In the case of the primarily RFP waste located within Pits 4 and 6, the Agencies have determined that the appropriate planning horizon is longer than 6 months, given the isolated site location and the relatively slow release and migration of contaminants buried at the site. Radionuclides associated with the RFP waste generally have release and migration rates well over 100 years. The VOCs migrate to the aquifer much more rapidly; however, the Organic Contamination in the Vadose Zone Project has been implemented to provide ongoing mitigation of the VOC release issue. Thus, the Agencies have determined that a planning horizon typical of a NTCRA (i.e., greater than 6 months) is appropriate, given the nature of the site releases and other site-specific considerations.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
11	What is the total percentage of waste you expect to retrieve from Pits 4 & 6 using the method of visual inspection, both in the remote handled (as planned for pit 6) and human operated system.	Actual percentages are difficult to quantify; however, there is no anticipated practical difference in the amount of waste expected to be removed through the use of a remote excavation system vs. the manned excavator system being used at ARP. Since the ARP II EE/CA (DOE-ID 2005a) was published, a number of modifications for ARP II have been introduced. First, a remote-controlled excavator will likely not be used. In addition to visual identification, radiological and VOC field-screening methods will be considered to confirm that suspect targeted forms are, in fact, targeted. This step removes uncertainty about the targeted waste status of certain types of sludge (as well as plutonium-contaminated filters and graphite), which may not be distinguishable from nontargeted waste forms on the basis of visual cues only.
12	What constitutes an acceptable amount of target waste retrieval to be exhumed and left behind, and how will you determine that?	The retrieval objective is to remove the inventory of targeted waste located in the retrieval area. A number of modifications to the approach presented in the ARP II EE/CA are being implemented. One such modification involves the use of field screening instrumentation, in addition to the visual examination steps, to assist in the identification of targeted waste streams. The DOE expects that these processes will be quite efficient in identifying and removing the inventory of targeted waste in the retrieval area. In addition, it is noted that inventory records provide a baseline for the amount of targeted waste within the areas to be excavated. The efficiency of the visual inspection and field screening process can be estimated by comparing the retrieved volumes to the inventory baseline as the retrievals are conducted. Therefore, the Agencies will be in a position to assess whether the achieved efficiency is sufficient to warrant modification of the removal approach for any potential future actions.
13	What are the plans to stabilize or do anything with the target waste that is not retrieved to keep it from migrating into the aquifer?	The proposed NTCRA does not involve planning to stabilize waste. Definition of any such activities would occur, if determined appropriate, in the context of the future OU 7-13/14 RI/FS.
14	What are the present thermal treatment options for treating and removing volatile organic compounds from waste that is not going to WIPP?	The ARP II EE/CA presents summary information on the use of thermal desorption processes to treat the waste for VOCs. As noted under Comment 8 above, the treatment process for the subset of waste that potentially requires treatment has not been designed at this time. As stated in the ARP II EE/CA, system design and operational parameters for any required treatment systems are not being developed until a better understanding is reached about the waste population that may require treatment (e.g., volume of waste not meeting waste acceptance criteria, constituents requiring treatment). The DOE also is considering offsite treatment capabilities that exist and may opt to transport the waste requiring treatment to an offsite facility. The most effective course of action will be better understood when the population of waste requiring treatment is better defined.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
15	KYNF would like to know if you have some type of marker for the Rocky Flats fire waste, and what are your plans to exhume and treat that?	The major fire at RFP occurred on May 9, 1969, in Building 776. Special notations were used to identify the waste on the disposal records. These records indicate the fire waste was buried in Pits 10, 11, and 12. The *Summary of Rocky Flats Waste Buried in the Subsurface Disposal Area* (Vejvoda 2005) confirms the notations used to identify the fire waste. The majority of the fire waste was later retrieved from Pits 11 and 12, starting in 1974, and was then placed in the Transuranic Storage Area. Remediation of the remaining fire waste will be determined in the OU 7-13/14 ROD.
16	The Alliance strongly supports exhumation of nuclear waste threatening the Snake River Aquifer. We have two primary concerns about the targeted waste removal now going forward. DOE is sampling non-targeted waste but not responding to new information in a timely manner. DOE is unexpectedly finding intact barrels and is then smashing them in the pit.	1. Only three sample drums of nontargeted waste had been retrieved at the time of the public meetings. Initial screening assays were performed on these drums to determine gross levels of radioactivity for purposes of safe storage and handling. More sophisticated equipment, which meets characterization requirements of the WIPP waste acceptance criteria, has been used to assay these three drums and one additional drum for final WIPP certification and characterization purposes. Based on the final assay information, all four of the nontargeted waste drums characterized were not transuranic waste. Caution should be exercised in drawing conclusions based on the limited number of data points that are available to date. 2. The OU 7-10 Glovebox Excavator Method Project exhibited drums in various stages of deterioration including some drums that were intact. Similar conditions were anticipated during the ARP retrieval; but overall, with a relatively small portion of the area excavated, the drums are in better condition than experienced during the OU 7-10 Project. A number of modifications will be used in ARP II. First, the approach to opening intact drums will be modified. Drums may be opened using hand tools or other equipment operated away from the digface (e.g., as in the drum packaging stations or on specialized tables located within the Retrieval Enclosure) or through other systems including excavator end effectors. As planned, these alternate methods will minimize the mixing of waste with soil and will significantly reduce the spread of radiological contamination within the enclosure.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
17	1. So far, the DOE has dug up 100+ barrels of targeted waste and 2 barrels of non-targeted waste in the first phase of the Pit 4 NTCRA. Samples of non-targeted waste are being retrieved because of public concerns during the comment period on Phase 1 that DOE might be leaving behind targeted waste (high TRU, high VOCs, and U) without knowing it. Full characterization on the retrieved non-targeted waste will be done later, but initial assays indicate that one barrel is in fact non-targeted and one barrel is TRU, an error rate of 50%. The problem is that the DOE is learning enough soon enough to indicate a need to retrieve material immediately surrounding the unexpectedly TRU barrel to see if it is TRU, too. This is akin to the "clean margin" sought in cancer surgery. It would seem as likely as not that the adjacent material is TRU, too. By not fully characterizing the non-targeted waste in a timely fashion, the DOE runs two risks: It will in fact leave behind targeted waste. It also loses the opportunity to improve its list of visual characteristics used to identify targeted waste. The concern surrounding this second risk is heightened by the current EE/CA's assertion that visual inspection is going well. It in turn leads us to remind the DOE that the goal of the Pit 4 NTCRAs are to protect the Snake River Aquifer, not just to validate what the DOE thinks it learned in Pit 9. The DOE should focus at least as rigorously on getting dangerous material away from our water as on gathering information for the remedial investigation/feasibility study for the entire burial grounds.	Please see Comment 16 for background information on nontargeted waste sampling done to date. Regarding comments about leaving transuranic waste in the ground, there is no doubt that some transuranic will remain after retrieval. The impact of the remaining transuranic waste will be factored into the final risk assessment used to support the OU 7-13/14 ROD. The purpose of ARP continues to be removal of the significant fraction of transuranic radionuclide content associated with the targeted waste streams, not to remove all transuranic waste from the pit. Using information from the retrieval to support the OU 7-13/14 RI/FS for the entire SDA remains a secondary benefit.
18	2. The DOE is finding intact barrels in Pit 4 phase 1, though it seems less likely that will occur in Phase 2. But the concern raised by the response to intact barrels remains. The DOE is smashing the barrels in the pit and proceeding with the visual inspection. It seems the DOE fears an increase in worker exposure if the intact barrels are removed before they're smashed. But we understanding that problem could be addressed by redesigning the transfer and handling area. Some redesign is intended (e.g., a way to overcome to time-consuming process of moving the excavator operator in an out) and other redesign is contemplated, for instance to accommodate boxes. As the DOE is making these improvements, why can't it modify the transfer bay so it can handle intact drums?	Please see the response to the second portion of Comment #16 above.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
19	What will be the effect of the just announced contractor change on either the techniques used or the timeline for this project? When will there be full public information available on the specifics of CH2M*WG-Idaho's bid?	A number of changes relative to that presented in the ARP II EE/CA (DOE-ID 2005a) are being evaluated and will be implemented. The fundamental objectives of the project—to retrieve targeted waste contaminated with COCs—will not change; however, the approach to opening intact drums will be modified. Drums may be opened using hand tools or other equipment operated away from the digface (e.g., as in the drum packaging stations or on specialized tables located within the Retrieval Enclosure) or through other systems including excavator end effectors. As planned, these alternate methods will minimize the mixing of waste with soil and will significantly reduce the spread of radiological contamination within the enclosure. In addition, field screening techniques will be employed to assist in the determination of whether a given waste stream is targeted or nontargeted waste. The ICP contract, developed on the basis of the CH2M♦WG Idaho, LLC proposal, is available on the DOE Web site at www.id.doe.gov.
20	The Alliance would appreciate more information about the ABRA, since confidence in its usability seems to vary between the DOE and regulators.	The ABRA (Holdren et al. 2002) was originally a draft comprehensive remedial investigation (which includes a baseline risk assessment) for the RWMC. The draft report was prepared in accordance with EPA guidance and was reviewed by the Agencies. However, the 2002 *Agreement to Resolve Disputes* (DOE 2002) for the Pit 9 Project stipulated that the remedial investigation be deferred until 2005. To preserve the 4 years of work that had been invested, the document was slightly modified and published with a different title and document number. Therefore, the ABRA was not reviewed and approved under the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991) process as the formal remedial investigation and basement risk assessment will be; however, it represents the best available baseline risk information for WAG 7. It is noted that the 2004 *Second Addendum to the Work Plan for the OU 7-13/14 Waste Area Group 7 Comprehensive Remedial Investigation/Feasibility Study* (Holdren and Broomfield 2004) was developed jointly by the Agencies and has formal standing under the Federal Facility Agreement/Consent Order (DOE-ID 1991). The Second Addendum (Holdren and Broomfield 2004) provides the framework for the comprehensive RI/FS, and it incorporates the ABRA by reference. If the Alliance would like a briefing about the ABRA, please contact our community relations staff at 526-4700 to make arrangements. Relevant reference information is available at http://ar.inel.gov.
21	Is depleted uranium a contaminant of concern at the SDA?	Depleted uranium is a waste form that contains COCs. Five isotopes of uranium are COCs at the SDA: U-233, -234, -235, -236, and -238. Of these, depleted uranium contains four of them: U-234, -235, -236, and -238.

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
22	INL must make a large number of TRU shipments by the end of this year to meet the Settlement Agreement milestones. How will this project contribute to that effort? Does INL favor characterization of exhumed waste for possible shipment to WIPP over treatment at the AMWTF?	The proposed ARP II NTCRA is being performed to fulfill CERCLA objectives relative to the waste buried in the SDA and, therefore, supports the OU 7-13/14 program being implemented under the Federal Facility Agreement/Consent Order (DOE-ID 1991). Once retrieved, it is planned that the buried waste will undergo characterization and certification through the WIPP Central Characterization Project facilities now located at the RWMC. These facilities have been established such that they can support processing of stored transuranic waste inventories and waste inventories that are generated as a result of waste retrieval. Priority for processing stored transuranic waste inventories and newly packaged buried waste inventories are dependent on DOE's programmatic commitments, and at this time, it is anticipated that the facility will process both stored and buried waste on an ongoing basis to maximize efficiency and system utility.
23	What is the current estimate of needed storage for non-WIPP waste? What is the likelihood of storage of non-WIPP waste at INTEC? In what quantity? The EE/CA states that non-WIPP waste (that is, material that is not returned to the pit but is not eligible for WIPP) will eventually be disposed of "off-site." Is that off-SDA or off-INL?	Currently, a volume estimate for the amount of non-WIPP waste that may require storage has not been developed. Such an estimate would have significant uncertainty, given that the percentage of waste that will not contain sufficient transuranic material to satisfy the WIPP waste acceptance criteria is unknown. At present, onsite RWMC storage options are preferred to the use of facilities at the Idaho Nuclear Technology Engineering Center; however, the use of compliant storage facilities outside of the RWMC will remain an option to provide waste management flexibility. The reference to non-WIPP waste disposal at offsite locations refers to disposal locations off of the RWMC or off of the INL.
24	Will the secondary waste discussed on page 14 eventually be disposed of at ICDF?	Secondary waste stream disposal will vary depending on waste stream characteristics. The ICDF is the primary off-RWMC disposal option for secondary waste streams that meets the ICDF waste acceptance criteria. In addition, secondary waste that comprises inert materials (e.g., personal protective equipment and plastic sheeting) may be buried within the active retrieval area. In addition to these options, various secondary waste streams will be evaluated for disposal at offsite disposal facilities, as needed.
25	What material might go in boxes rather than barrels? Why?	Transuranic waste is being managed in drums under the ARP program. The use of boxes is a possibility that offers certain efficiencies from a volume and ease of repackaging standpoint. The language in the ARP II EE/CA (DOE-ID 2005a) was included to bound a range of possible container types that could be used in the future.
26	What is the timeline for treatment of the high-VOC waste? Will that treatment facility handle other waste as well? Will it be permitted?	Details of the potential VOC and other treatment processes will not be fully developed until a reliable estimate of the subject drum population can be developed based on retrieval and characterization experience. Both on and offsite treatment options are being evaluated and may be performed as part of the action in the future. If the need for VOC treatment is determined and performed as part of the removal action, the treatment will be required to meet the substantive requirements of applicable laws, and a public involvement plan will be developed.
27	What do you use for dust suppressant at the dig face?	ARP retrieval efforts have used a commercial dust-suppressant product. Other

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
		commercial dust suppressants are being evaluated at this time. In addition, it is expected that the use of water to further dampen the soil will be implemented on an ongoing basis to assist in keeping radiological contamination spread from dusty conditions to a minimum.
28	The Accelerated clean-up should not result in situation where TRU waste and other Contaminants of Concern (COCs) remain at PIT 4, in quantities that pose an environmental risk or human health risk. It's very doubtful that visual inspections will be able to differentiate between targeted and non-targeted waste well enough to excavate all the TRU and RCRA waste, thus raising concerns of the final fate of these remaining contaminants. The current plan is to leave it in place (or re-bury it) if it not retrieved during this initial streamlined effort, until a final RI/FS ROD is completed. The Tribes believe that this is an error. A more accurate method should be used at the outset, to detect TRU waste at the dig-face, so that a more complete retrieval can be accomplished on the spot and, either be immediately characterized and treated; or placed in drums at safe above-ground storage until it can then be properly characterized, treated, and shipped. Unless this course of action is taken, human error in the visual inspections will result in unacceptable amounts of waste remaining in Pit 4, that will be costly to retrieve and treat, or unacceptably dangerous to leave in place.	A number of modifications to the approach presented in the ARP II EE/CA will be implemented. One such modification involves using field-screening instrumentation, in addition to the visual examination steps, to assist in the identification of targeted waste streams. The DOE expects that these processes will be quite efficient in removing the inventory of targeted waste in the retrieval area. The objective of this removal action is focused on removing certain types of targeted waste from the designated portion of Pits 4 and 6 rather than removal of all waste. As planned, the action will remove waste streams that contain a significant portion of the COCs. These COCs include VOCs, uranium, and transuranic radionuclides including plutonium. While removing the majority of the COCs, the proposed approach does leave both chemical and radiological residuals in the pit. A significant amount of risk assessment work has been completed to date and is part of the Administrative Record file for WAG 7. The ABRA (Holdren et al. 2002) is the primary document referred to in the ARP II EE/CA for this proposed action. Based on this and other documentation, the Agencies have proposed a removal action that addresses the COCs in RFP waste (located in the designated portions of Pits 4 and 6) that have been identified in the risk documentation prepared to date. Consequently, it is concluded that the proposed removal approach, when combined with implementation of the final action for WAG 7, will be protective of human health and the environment. Final evaluation of the comprehensive risk for the RWMC and the full range of associated remedial options will be documented in the OU 7-13/14 ROD.
29	The DOE's Plan to remove only 80% of the waste at Pit 4, through visual methods, may result in unacceptable amounts of TRU, RCRA, and high-level waste remaining at the site that will be costly to be cleaned up through the "normal" follow-up FFA/CO process, and pose unacceptable environmental and human health risks to cap in place, a treatment alternative that, in presentations to the Fort Hall Business Council, is a likely final "treatment" remedy.	See response to Comment 28 above. Following targeted retrieval, a cap is expected to provide long-term protection of human health and the environment. A cap will ultimately be a component of the overall remedy for the landfill, even if every drum of waste is removed from the targeted retrieval areas. A cap is a routine component of all landfill closures, and will be required to inhibit moisture and to restrict intrusion by plants and animals into residual contamination.
30	Another issue of concern is if excavation results in the discovery of waste considered "Classified Waste" or high-level waste. DOE has not provided to the Tribes a clear path forward in the event that these wastes are found at Pit 4. Which leads to an issue regarding so called "orphan Waste" which also has no path forward.	A security plan will be implemented to address considerations and appropriate actions if classified waste is encountered. Trained personnel are on staff to satisfy requirements of the plan and applicable DOE orders that define appropriate management steps in case classified waste is encountered. The DOE has determined, based on best available information, that there is no high-level

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
		waste in the retrieval area.
31	The goal of INL accelerated clean-up projects was not to compromise on the efficiency of the overall waste retrieval and treatment at the INL, by cleaning up faster, but in the end leaving more waste in the pit than if the clean-up was not "accelerated". Yet that is exactly what is implied by the draft proposal presented at Fort Hall. This "may or may not require further action" position of DOE renders the accelerated clean-up plans an unacceptable risk by the possibility of leaving more radioactive (TRU, mixed, low-level) and RCRA waste, at Pit 4 than would be the case if the clean-up were to follow a non-accelerated CERCLA track, pursuant to the FFA/CO agreements.	The basis for the conclusion that less overall waste will be retrieved if the accelerated action is implemented as opposed to waiting for the normal federal facility agreement and consent order (FFA/CO) process is not clear. The NTCRA is proposed as a means to remove the waste streams that contain a significant portion of the COCs from the retrieval area and to initiate cleanup sooner, rather than waiting for the comprehensive OU 7-13/14 ROD and its implementation in approximately 2010. These COCs include VOCs, uranium, and transuranic radionuclides including plutonium. Regardless of the NTCRA, the Agencies are required by the CERCLA statute to complete the RI/FS process and then propose a preferred remedial alternative that is protective of human health and the environment. Based on current planning, a broad range of remedial alternatives will be assessed in the feasibility study including full retrieval, treatment and disposal, retrieval alternatives that include scenarios for partial removal of waste, and other options associated with the installation of a surface barrier that would generally leave waste in place. The preferred alternative will be based on evaluation of the nine CERCLA criteria as required by the NCP (40 CFR 300) and is required to provide both short- and long-term protection of human health and the environment. Until this process is completed, the Agencies cannot reasonably conclude whether further retrieval of waste will be performed or is justified based on the site-specific circumstances.
32	In summary, DOE accelerated clean-up at Pit 4, is only justifiable if this accelerated part of the project, in combination with the final ROD remedy, results in more TRU and RCRA waste retrieved, treated and shipped out, than if the clean-up were to proceed in a non-accelerated track. DOE staff, in their presentations at Fort Hall, did not guarantee that this would be the case. The Tribes are concerned that visual inspection techniques may be inherently flawed in the ability to efficiently find TRU and RCRA waste, and this material will be difficult and costly to later retrieve and treat through the more effective (yet slower) FFA/CO track, that presumably would be carried out a few years later. The Tribes are also concerned that DOE has not adequately considered a better alternative to technique to detect and exhume TRU waste at the dig-face, during the accelerated process, that would provide better efficiency of the overall clean-up.	See responses to Comments 28 and 31 above.
33	So this is Dr. Peter Rickards making public comments down at the College of Southern Idaho on the ninth of March on the retrieval project II, and basically the comment I'd like to point out is that the scenario is dangerous because of the use of HEPA filter on the ventilation system, basically, that is used to dig up loose waste. And the	The use of HEPA filters, in the manner proposed, is consistent with state-of-the art industry practice, and the associated control efficiencies are widely accepted throughout DOE and Nuclear Regulatory Commission facilities. ARP II will include continuous radiological monitoring to quantify the radionuclide emissions released from HEPA filters in accordance with relevant EPA regulations that are ARARs to verify and

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
	HEPA filters are documented to not be able to contain the plutonium, etc. in there. And those were complaints that I registered at the first one and every scoping hearing, and you all have ignored it. Come back about the HEPA filters. (Comment received orally at the College of Southern Idaho.)	document that actual emissions are within allowable regulatory limits.
34	And the other most important issue we'll mention here, at the moment, is the Plutonium-238 and the Dr. Scott paper on the inhalation of any amount of Plutonium-238 violating the inhalation standards for workers. And if that's the case, we certainly don't need the public doing that. So we have, basically, the Plutonium-238 in trace amounts, but that is right now in the waste you're digging up, most likely, and also in the waste you're leaving. And that's what you must consider here, and I don't think we've addressed the Plutonium-238 issue before. So those are the two things that I'd like to leave you here tonight. Thank you very much. (Comment received orally at the College of Southern Idaho.)	The same measures taken to protect workers and the public from Pu-239 and -240 also are effective for Pu-238. The inhalation slope factors (i.e., number of cancer incidents per pCi) are almost the same, with Pu-239 and -240 having an inhalation slope factor of 3.33E-08 compared to 3.36E-08 for Pu-238. Protective measures include supplied air and other personal protective equipment for any worker entering the Retrieval Enclosure, redundant filtering systems, and monitoring.
35	How did you prioritize starting in Pit 4/9 [6].	The current and proposed retrievals in Pits 4 and 6 are focused only on buried RFP waste. The location for these retrievals was based on an assessment that compared various areas in the SDA that contain high densities of RFP waste. The criteria used to evaluate the areas included total transuranic (curies), total VOC waste, implementability, cost, and schedule.
36	Why do you only have two people retrieving waste at a time? Why not more people to shorten the time required for this project?	Details in the ARP II EE/CA (DOE-ID 2005a) relating to the excavation approach were presented for informational purposes consistent with original baseline planning and will be modified, as needed, to meet project objectives. Consideration has been given to including more than one excavator within the retrieval area at a time. Because of the relatively small retrieval area, practical and safety constraints do come into play that somewhat bound efforts to expand operations significantly beyond the original baseline design.
37	Was the original disposal of the sludges in drums?	There are five primary sludge waste streams from RFP. All five of these waste streams were originally buried in drums.
38	What is your target date for completion of this project?	The current NTCRA schedule shows planned completion of retrieval operations in January of 2009.
39	What constitutes completion of the project?	At a summary level, the scope of ARP II consists of retrieval of targeted waste from the designated retrieval area, characterization and certification of the waste for shipment to the WIPP facility in New Mexico, any necessary treatment or disposal of waste, installation of an interim soil cover over the retrieval area, and demobilization and decontamination of the structures erected to support facility operations. In general, when these activities are completed, the NTCRA described in the ARP II EE/CA will be

Table B-1. (continued).

Comment No.	Comment/Issue	Resolution
		completed.
40	You commented that the volatile organic compounds that have seeped into the aquifer are currently below drinking water levels. Are you anticipating a change + or – in the future? If so, at what rate?	Volatile organic compounds have migrated to the aquifer beneath the RWMC. With the exception of carbon tetrachloride, all other detectable VOCs are well below the drinking water limits. The carbon tetrachloride concentration slightly exceeds the drinking water limit (5 μg/L) in Well M7S and hovers near the limit (i.e., sometimes above, sometimes below) in Wells A11, A31, and M16S. Concentrations fluctuate in these three wells, and concentration trends are not apparent.
ABRA = Ancillary Basis for Risk Analysis ARAR = applicable or relevant and appropriate requirement ARP = Accelerated Retrieval Project CERCLA = Comprehensive Environmental Response, Compensation and Liability Act COC = contaminant of concern DOE = U.S. Department of Energy EE/CA = environmental evaluation/cost analysis EPA = U.S. Environmental Protection Agency FFA/CO = federal facility agreement and consent order HEPA = high-efficiency particulate air ICDF = Idaho National Engineering and Environmental Laboratory CERCLA Disposal Facility ICP = Idaho Cleanup Project INL = Idaho National Laboratory		KYNF = Keep Yellowstone Nuclear Free NCP = National Contingency Plan (40 CFR 300) NTCRA = non-time-critical removal action OU = operable unit RFP = Rocky Flats Plant RI/FS = remedial investigation and feasibility study ROD = record of decision RWMC = Radioactive Waste Management Complex SDA = Subsurface Disposal Area VOC = volatile organic compound WAG = waste area group WIPP = Waste Isolation Pilot Plant

B-2. REFERENCES

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